# Canovision 8

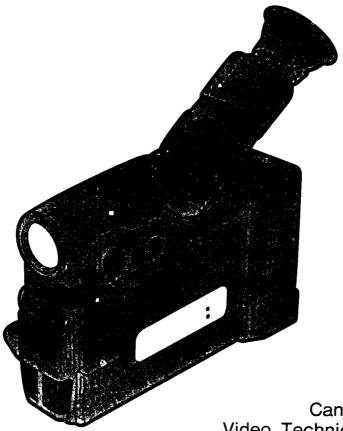
# SERVICE MANUAL

# **UC30HIE**

(REF. NO. D15-6430)

8mm Video Camcorder

PAL



DY8-1156-430-000 © CANON INC. 1911 Canon Inc.
Video Technical Service Dept.
First Edition: Nov. 1992
Printed in Japan

#### SAFETY PRECAUTIONS

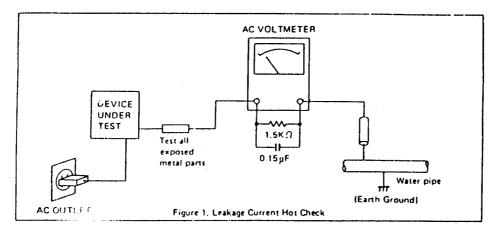
The following precautions should be observed when servicing.

- 1. Since many parts in the unit have special safety-related characteristics, always use genuine CANON replacement parts.
  - Especially critcal parts in the power circuit block should not be replaced with other makes.
  - Critical parts are marked with extstyle ext
- 2. The primary source of X-ray radiation in this viewfinder is the picture tube. The tube used in the viewfinder is especially constructed to limit X-ray radiation emission. For continued X-ray radiation protection, the replacement tube must be same type as the original, CANON approved one.
- 3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been oberheated or damaged by the short circuit.
- 4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
- 5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.
- 5-1 Leakage Current Cold Check
  - 1) Unplug the AC cord and connect a jumper between the two prongs on the plug.
  - 2) Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metalic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metalic part has a return path to the chassis, the reading should be between  $1\text{M}\Omega$  and  $5.2\text{M}\Omega$ . When the exposed metal does not have a return path to the chassis, the reading must be  $\infty$ .
- 5-2 Leakage Current Hot Check
  - 1) Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
  - 2) Connect a  $1.5 \mathrm{K}\Omega$  10 watt resistor, paralleled by  $0.15 \mu\mathrm{F}$  capacitor, between each exposed metalic parts on the unit and a good earth ground such as a water pipe, as shown in the figure below.
  - 3) Use an AC voltmeter, with  $1000\Omega/\text{volt}$  or more sensitivity, to measure the potential across the resistor.
  - 4) Check all exposed metallic parts of the cover (Cable connection, Handle bracket, metallic cabinet. Screwheads, Metallic overlays, etc), and measure the voltage at each point.
  - 5) Reverse the AC plug in the AC outlet and repeat each of the above measurements.
  - 6) The potential at any point should not exceed 0.75V RMS.

A leakage current tester (FLUKE MODEL: 8000A equivalent) may be used to make the hot checks.

Leakage current must not exceed 0.5 milliamp.

In case a measurement is out side of the limits specified, there is a possibility of a shock hazard, and corrective action must be taken before returning the instrument to the customer.



# CONTENTS

CHAPTER I.	GENERAL DESCRIPTION OF PRODUCT	
1. 2. 3.	Product Overview  New Technology  Circuit Description	I-14
CHAPTER II		
1.	Before Disassembling/Adjustments	— 1
2.	Disassembling	п о
3.	Setting	ц — Э п — 12
4.	Service Modes	II — 18
5.	Electrical Adjustments of Camera Section	II 25
6.	Electrical Adjustments of AF Section	II - 28
7.	Electrical Adjustments of Recorder Section	II — 38
8.	Adjustments of Electronic Viewfinder	$\Pi - 39$
9. 10.	Checking and Adjusting Items after Replacing Main Parts	<u>I</u> – 40
CHAPTER I		
1.	Exploded Views	<u> </u>
2.	Electrical Parts List	<b>Ⅲ</b> −17
3.	Parts List	ш — 22
CHAPTER I	V. DIAGRAMS	
1.	Interconnection Diagram	<b>V</b> – 1
2.	Block Diagrams	N - 2
-•	Cinnii Boord (Schomatic Diagrams	N-5

# CONTENTS

CHAPTER I. GENERAL	DESCRIPTION	OF	PRODUCT
--------------------	-------------	----	---------

1.	Product Overview	
1-1	Product Overview  Major features	_ 1
1-2	Design features of each section	- 2
1-3	External view and nomenclature	_ 3
1-4	Brief description of control buttons, terminals and external parts	<b>–</b> 5
1-5	Information display on electronic viewfinder	- 10
1-6	UC30HiE video system chart	-13
2.	New Technology	
2-1	New Technology  Camera section	_ 14
2-1-1		<u> </u>
3.	Circuit Description	
3-1	Power supply circuit	1 – 1
3-1-1	Kinds of power sources	1 1:
3-1-2	Power-on/off sequence	I - Z
3-2	System control circuit	1 - 2
3-2-1	General	1 – 2:
3-2-2	Serial data communication	1 <del>-</del> 21
3-2-3	Safety functions	1-2
3-3	Pin function of recorder ICs	1 – 30
3-3-1	Main microcomputer IC4102	1 -3
3-3-2		I — 3:

# CHAPTER I. GENERAL DESCRIPTION OF PRODUCT

#### 1. Product Overview

Easy to use, compact and light in weight as Model UC10, the UC30HiE represents more excellent quality in picture (Hi8-recording 470,000-pixel CCD), sound (stereo) and versatility (programmed AE, etc.).

### 1-1 Major features

- 1) Superlative picture quality and excellent performance
  - Inner-focus 8x zoom lens that allows automatic focusing in a range from 10 mm (wide-angle end) to infinity
  - ° High-sensitivity, superb-performance 1/3-inch CCD with 470,000 pixels
  - \* Auto white balancing on new principle of white extraction through 48 split imaging areas
  - ° Programmed automatic exposure
  - Automatic rangefinding area changeover function for expanding the rangefinding area if the main subject deviates from the center part of screen.
  - ° Hi-fi stereo sound effect

#### 2) Versatile functionalities

- ° Quick recording mechanism (just 0.2 second required to start shooting)
- ° Blank search function
- Reshooting function
- \* High-speed electronic shutter function (1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 sec)
- "Variable-speed power zooming (high-speed or low-speed zooming selectable)
- Backlight compensation button
- \* Rechargeable lithium battery incorporated

## 3) Ease of use

- ° Power focusing enabled even in AF mode
- $^{\circ}$  Tally lamp/wireless remote controller turn-off function
- $\ensuremath{^\circ}$  Dual-trigger mechanism for allowing low-angle shooting with ease
- ° Recorder control buttons hidden under external cover

# 1-2 Design features of each section

Table I-1 shows the unique design features of each section of this camcorder.

Table I-1

Camera section						Recorde	er section	)	
Lens section	AF circuit	CCD	SENSOR and PROCESS circuit	AUDIO circuit	VIDEO circuit	SYSCON circuit	SERVO circuit	Mechanism	Power supply
8x inner- focus zoom lens	Fuzzy- logic TV-AF	1/3-inch CCD with 470,000 pixels	Newly developed (Basically same as in conven- tional circuit)	Same mono- phonic audio cir- cuit as in UC1HiE	Third- genera- tion VIDEO IC	Based on UC-10E design	Based on UC-10E design	UC mecha- nism based on MC-5 design	Based on UC-10E design

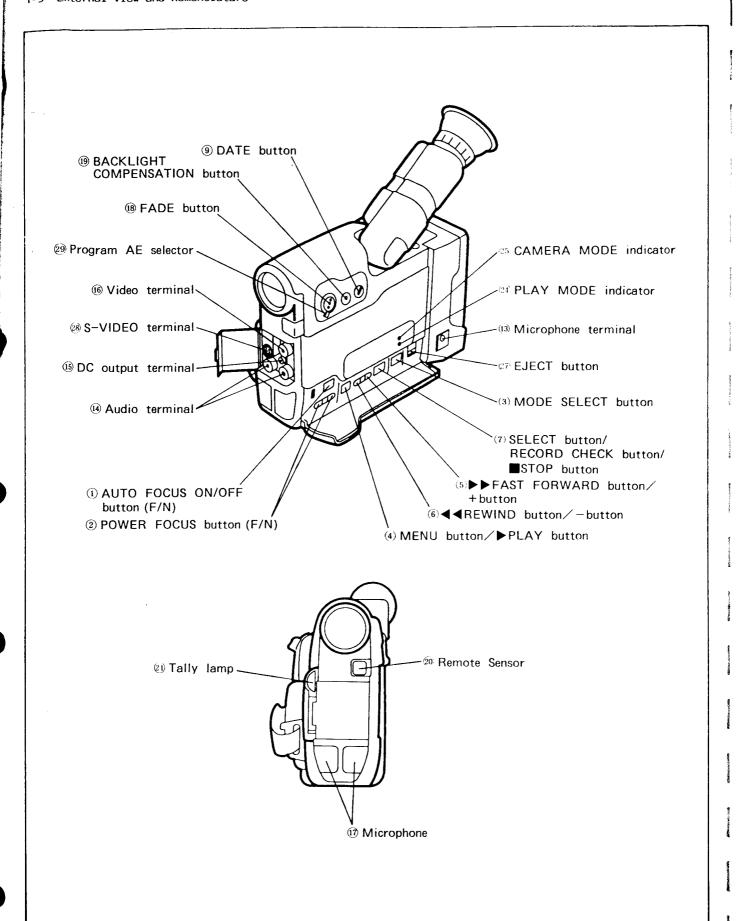


Fig. I-1

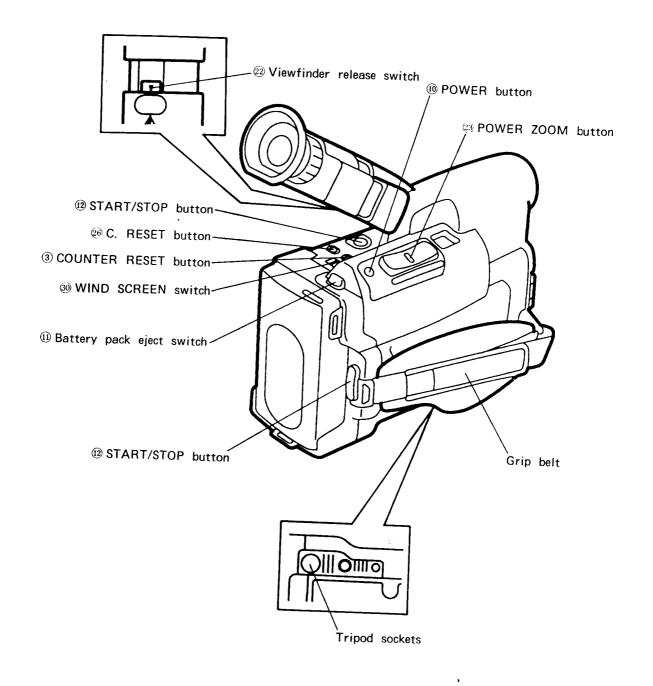


Fig. I-2

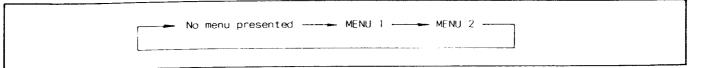
# 1-4 Brief description of control buttons, terminals and external parts

- AUTO FOCUS ON/OFF button

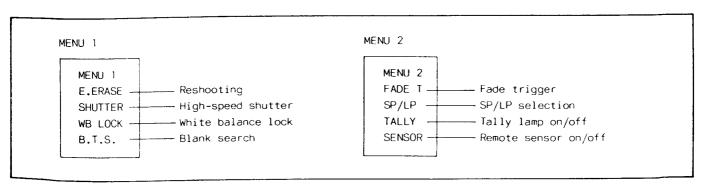
  Each press of this button sets the auto focus mode/the power focus (manual focus) mode. When the power focus mode is selected, the "AF OFF" is indicated on the viewfinder screen.
- POWER FOCUS buttons (F/N)
  In the auto focus mode, press the AUTO FOCUS ON/OFF button and then F ◀ or N ▶ button (POWER FOCUS button). Thus, the manual focusing can be used.
  Clicking the POWER FOCUS button within one second brings the subject into focus slowly; holding it down for more than one second brings the subject into focus promptly. When using the POWER FOCUS button, remember the following instructions:
  - of the angle of view is changed by zooming after adjusting the focus, the subject goes out of focus in the scene. To avoid this, determine the angle of view first and then focus on the subject.
  - ° If the ZOOM button is used during power focusing, the subject goes out of focus.
- OUNTER RESET button
  In other than the fast playback, reverse playback and high-speed search modes, pressing this button resets the linear time counter to zero (0:00:00).
- (4) MENU button/▶ PLAY button
  In CAMERA mode: Functions as MENU button.
  Only the basic functions to be used frequently are provided as the buttons on

camcorder body for ease of use. Other non-basic functions can be selected from the menus on viewfinder screen using the MENU button.

Each press of the MENU button flips through a total of two menu pages in a cyclic manner as indicated below.



On these two menu pages, the user can select and control the following functions.



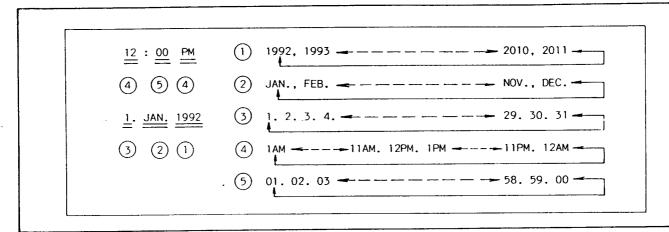
In PLAY mode : Functions as ▶ PLAY button.

Pressing this button starts playback operation.

## (5) ►► FAST FORWARD button/+ button

In CAMERA mode: Functions as + button

- ° In the recording pause state, a forward picture search can be made by holding down this button. Releasing it sets up the recording pause state again.
- ° In auto date setting, 'year', 'month', 'day', 'hours' and 'minutes' can be changed by pressing this button.



° In menu item selection, the arrow cursor can be moved forward with this button.

# In PLAY mode : Functions as ▶▶ FAST FORWARD button

Pressing this button in the stopped state causes the video tape to be fed fast. And, holding it down in the playback mode reproduces pictures forward rapidly at a speed of 7x fast motion. Also, by holding down this button during fast-forwarding, pictures can be searched forward rapidly at a speed of 11x fast motion at SP and 22x at LP.

# (6) ◀◀ REWIND button/- button

In CAMERA mode: Functions as - button.

- ° In the recording pause state, a backward picture search can be made by holding down this button. Releasing it sets up the recording pause state again.
- ° In auto date setting, 'year', 'month', 'day', 'hours' and 'minutes' can be changed by pressing this button.
- ° In menu item selection, the arrow cursor can be moved backward with this button.

#### In PLAY mode : Functions as ◀◀ REWIND button.

Pressing this button in the stopped state rewinds the video tape. And, holding it down in the playback mode reproduces pictures in the reverse sequence rapidly at a speed of 5x fast motion. Also, by holding down this button during rewinding, pictures can be searched backward at a speed of 11x fast motion at SP and 22x at LP.

7) SELECT button/RECORD CHECK button/■ STOP button

In CAMERA mode: Functions as SELECT button or RECORD CHECK button.

- In the recording pause state, pressing this button causes the tape be played back for approx. three seconds so that the user can check the recording on tape. Then, the recording pause state is set up again at the previous position on tape.
- "If it is desired to reshoot during recording, set up the recording pause state before '\*' mark disappears from the viewfinder screen. Press the MENU button 4. Then, while 'E.ERASE' is pointed at with the arrow cursor, press this button. Thus, the tape can be rewound to the start-of-shooting position automatically.
- $^{\circ}$  On MENU 1, point at 'SHUTTER' with the arrow cursor using + button (5). Then, with this button, a shutter speed can be selected in a cyclic manner as indicated below.

No indication  $\rightarrow$  1/120  $\rightarrow$  1/250  $\rightarrow$  1/500  $\rightarrow$  1/1000  $\rightarrow$  1/2000  $\rightarrow$  1/4000  $\rightarrow$  1/10000 -

- ° On MENU 1, point at 'WB LOCK' with the arrow cursor using + button (5). Then, the auto white balance function can be locked/unlocked by pressing this button.
- ° On MENU 1, point at 'B.T.S.' with the arrow cursor using + button (5). Then, when this button is pressed, the end-of-recording position on tape is located in fast-motion search (pictures reproduced). The recording pause state is set up automatically at the end-of-recording position.
- ° On MENU 2, point at 'FADE I' with the arrow cursor, and press this button. 'FADE I' will then be indicated at the right on viewfinder screen. In this state, press the FADE button (18) to blink 'I'. Then, when the START/STOP button (29) is pressed to start recording, a picture is faded in. Also, during recording, a picture can be faded out using this button.
- $^{\circ}$  On MENU 2, point at 'SP/LP' with the arrow cursor using  $^{\circ}$  button (5). Then, the tape speed (SP/LP) can be selected by pressing this button.
- On MENU 2, point at 'TALLY' with the arrow cursor using + button (5). Then, when this button is pressed, 'T OFF' appears at the right on viewfinder screen. In this state, the tally lamp remains off during video shooting. (During receiving the infrared-light signals from remote controller, the lamp is lit up.)
- ° On MENU 2, point at 'SENSOR' with the arrow cursor using + button 5. Then, when this button is pressed, 'S OFF' appears at the right on viewfinder screen. In this state, the remote control sensor remains inactive.
- ° Press the DATE button 9, and change 'year', 'month', 'day', 'hours' and 'minutes' using + button 5 or button 6. Then, the correct date and time can be set by pressing this button.

In PLAY mode : Functions as ■ STOP button.

Pressing this button causes tape drive to stop.

- 8 MODE SELECT button
  Each press of this button sets the PLAY mode/the CAMERA mode.
  The functions of buttons 4, 5, 6 and 7 can be changed with PLAY/CAMERA mode selection using this button.
- (9) DATE button
  ° Pressing this button displays the date and/or time on the viewfinder screen as indicated

Date/time not displayed  $\rightarrow$  1. JAN. 1992  $\rightarrow$  Date/time not displayed  $\rightarrow$  12:00 PM  $\rightarrow$  12:

- ° On the CAMERA mode, the date setting state can be selected by holding this button for approx. five seconds. Then, the exact date and time can be set using + button (5), button (6) and SELECT button (7).
- POWER button
  Used for turning power on/off.
- 11) Battery pack eject switch
  To take the battery pack out of its box, press this switch.
- (12) START/STOP button
  In CAMERA mode: When this button is pressed in the recording pause state, the recording operation is resumed. Pressing it again causes the camcorder to get back to the recording pause state.

In PLAY mode : When this button is pressed during playback, the picture is made still.

- (13) Microphone terminal Used for connecting the optional microphone.
- (14) Audio terminal Used for audio output.
- (15) RF unit DC output terminal
  Used for supplying +5 V power to the RF unit RU-100.
- Video terminal
  Used for video output.
- (17) Microphone
  Nondirectional microphone.
- (18) FADE button
  In the CAMERA mode, holding down this button causes the picture and sound to disappear gradually (fade-out). When it is released, they appear gradually (fade-in). White fading can thus be provided. Note that this white-fading function is not interlinked with the START/STOP button.

- BACKLIGHT COMPENSATION button
  While this button is held down, compensation can be made for exessive backlight in the scene being videographed.
- Remote sensor
  Infrared-light signals from the remote controller are received through this window. The signal-receivable range is approx. 30 degrees on each of the left and right angular sides and approx. 15 degrees on each of the upper and lower angular sides (with respect to the face of remote sensor). The maximum remote-control distance is five meters.
- (21) Tally lamp

  The tally lamp flashes during camera recording operation. It lights up steadily when the remote control signal is received.

Camera recording operation ...... ON for 0.5 sec, OFF for 0.5 sec Remote control signal received ... Lights up steadily.

- Viewfinder release switch .

  This switch appears when the eyepiece adapter is pulled from the viewfinder until it is stopped. To remove the eyepiece adapter, hold down this switch.
- POWER ZOOM button
  With this button, the angle of view (frame) can be changed continuously in a range from wideangle end to telephoto end.
- PLAY MODE indicator
  This green indicator lights up when the PLAY mode is selected. When the voltage level of battery decreases down to the lower limit, moisture condensation takes place or any error occurs in operation, this indicator flashes to provide warning.
- CAMERA MODE indicator
  This red indicator lights up when the CAMERA mode is selected. When the voltage level of battery decreases down to the lower limit, moisture condensation takes place or any error occurs in operation, this indicator flashes to provide warning.
- C.RESET button
  Pressing this button resets the linear tape counter to 0:00:00. (Loading a cassette resets the counter.)
- 27) EJECT button
  In other than the recording mode, pressing this button allows you to take out the cassette tape regardless of whether power is turned on or not.
- (28) S-VIDEO terminal
  Used for input/output of the Y/C-separated S-video signal.
- 29 Program AE selector Selects the program AE mode (3 kinds).
- WIND SCREEN switch Setting this switch "IN" reduces wind noise.

### 1-5 Information display on electronic viewfinder

The electronic viewfinder in Model UC30HiE lets the user readily know a repertoire of current statuses and settings. It displays the camera operating status, recorder operating status, warning message, etc. Still more, the user can select the auto date mode, timer setting mode or menu mode at a touch of the button.

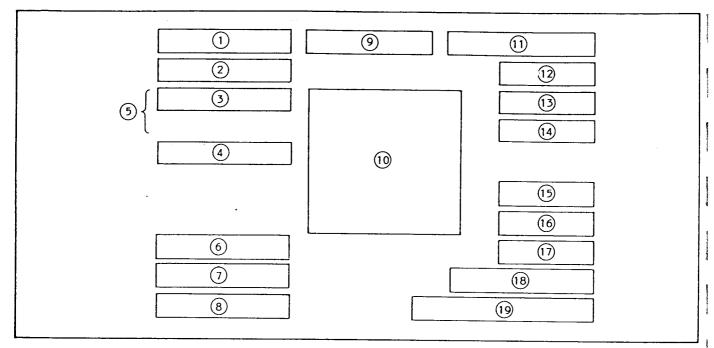


Fig. I-3

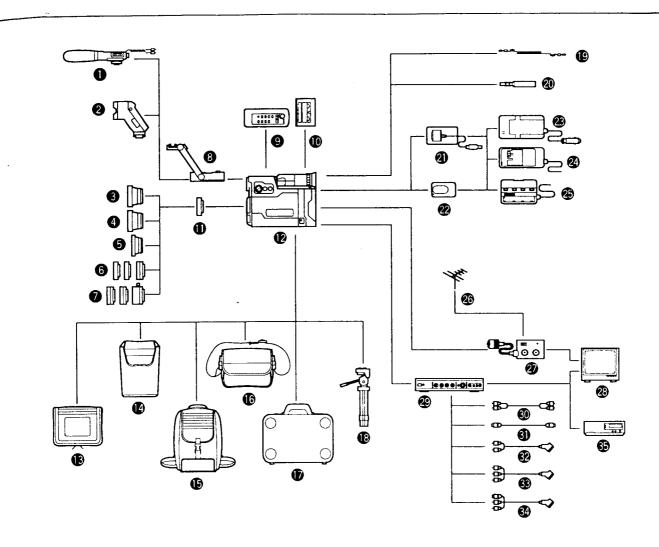
Table I-2 (1/3)

No.	Item	Display	Description
1	AF mode	No indication AF OFF	When the autofocus mode is selected. With selection of power focus mode.
2	White balance mode	No indication WB LOCK	When the full-auto white balance is selected. When the white balance function is locked.
3	High speed shutter mode	No indication 1/120 1/250 1/500 1/1000 1/2000 1/4000 1/10000	With selection of normal shutter speed (1/50 sec.) With selection of shutter speed of 1/120 sec. With selection of shutter speed of 1/250 sec. With selection of shutter speed of 1/500 sec. With selection of shutter speed of 1/1000 sec. With selection of shutter speed of 1/2000 sec. With selection of shutter speed of 1/4000 sec. With selection of shutter speed of 1/10000 sec. With selection of shutter speed of 1/10000 sec.
4	Backlight compensation	No indication BLC	No backlight status When backlight is compensated.
(5)	Program AE	No indication PORTRAIT SPOT SAND & SNOW	Auto mode is selected.  PORTRAIT mode is selected.  SPOTLIGHT mode is selected.  SAND & SNOW mode is selected.

No.	Item	Display	Description
6	Hi8	Hi8	Hi8 recording mode.
7	Tape speed selection	SP LP	Standard play Long play
8	Main operation	PAUSE No indication  REC PLAY  STILL STOP FF RWD EJECT EJECT(Blinking)	When the recording pause mode is selected. When the search, high-speed fast-forward playback, high-speed rewind playback, or record review function is activated. When the recording operation is selected. When the playback, fast-forward playback or fast rewind playback function is activated. When the still playback function is activated. When the camcorder is stopped. When the videotape is forwarded fast. When the videotape is rewound. When the videotape cassette is ejected. On occurrence of an error. When reshooting is allowed.
9	Timer indication	OSEC ∿ 10SEC	Counting down for 10 seconds from the moment the recording is indicated.
10	MENU display <menu 1="" page=""></menu>	MENU 1 E.ERASE SHUTTER WB LOCK B.T.S.	Menu page 1 is displayed.  For reshooting.  For high-speed shutter selection.  For white balance lock/unlock  For blank search  Selectable with the arrow cursor
	<menu 2="" page=""></menu>	MENU 2 FADE T SP/LP TALLY SENSOR	Menu page 2 is displayed.  For fading interlinked with trigger.  For selecting tape speed (SP/LP)  For turning on/off the tally lamp.  For turning on/off the remote sensor.  Selectable  with the  arrow  cursor
11)	Counter value	-9:59:59 -2 0:00:00 -2 9:59:59	Hours:minutes:seconds
(12)	Tape status	TAPE (Blinking) T. END	When the videotape is not loaded. When the end of videotape is reached in recording.
13	Battery status	BATT (Blinking)	When the battery voltage becomes lower than the predetermined level.
14)	Dew (moisture condensation)	DEW (Blinking)	On occurrence of moisture condensation.
15)	Fade mode	No indication FADE T ('T' blinking)	Normal fading Fading interlinked with trigger.

Table I-2 (3/3)

No.	Item	Display	Description
16	Tally lamp mode	No indication T OFF	When the tally lamp function is enabled. When the tally lamp function is disabled.
17)	Remote control mode	No indication S OFF	When the remote control function is turned on. When the remote control function is turned off.
18	Time	12:00 AM ∿ 11:59 PM	The current time is displayed.
19	Date	1. JAN. 1992 \( \) 31. DEC. 2011	The current date is displayed.



- **MM-200 Stereo Mixing Microphone**
- VL-20 Battery Video Light
- WD-37 Wide-converter
- WA-37 Wide Attachment
- 6 TL-37 Tele-converter
- 6 FS-37U Filter Set
- FS-37 Filter Set
- SA-1 Adapter Bracket
- **9** WL-51 Wireless Controller
- 10 8mm Video Cassette
- SR-27/37 Step-up Ring
- **UC30HiE**
- ® RS-U2 Rain Shield
- SJ-U1 Soft Video Jacket
- **★ VK-U1 Video Backpack**
- **6** SC-U1 Soft Carrying Case
- HC-U2 System Case
- Tripod
- SS-200 Shoulder Strap

- WS-20 Wrist Strap
- ② DC-200 DC Coupler
- BP-E77K/BP-E722/BP-E722D Battery
- CB-110 Car Battery Adapter
- CA-200/CA-100 Compact Power Adapter
- MC-100 Multi-battery Charger
- **4** Aerial
- RU-100 RF Unit
- ② TV
- RGB-100 RGB Converter (available in U.K. and Continental European countries)
- C-150 AV Cable
- **③** S-150 S-video Cable
- PC-150 SCART Cable
- PC-170ST Stereo SCART Cable
- **Ø** PC-270SST S-stereo SCART Cable
- **⑤** VTR

#### 2. New Technology

#### 2-1 Camera section

#### 2-1-1 AE system

The UC30HiE adopts the program AE function to enable the videographing beginners to shoot a high-quality picture with ease.

By choosing just a mode out of 1. SPOT LIGHT mode, 2. PORTRAIT mode, 3. SAND & SNOW mode, the best light measuring method, suitable shutter speed, iris and AGC control are set automatically according to the recording subject conditions.

The program AE function for the model UC1HiE controls the iris and AGC with the microcomputer directly, however, this method controls them by adjusting the iris servo loop and AGC servo loop. (This is called as the Simple Program Control Method.)

Consequently, the diagrams of program for the model UC1HiE and UC30HiE are different each other although the idea of methods are the same.

# 1. Auto exposure mode

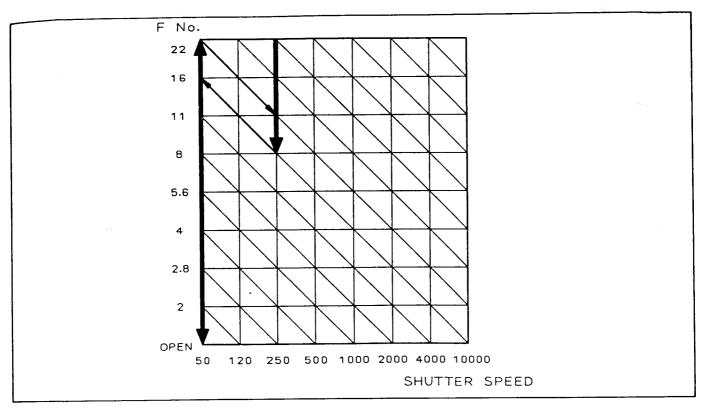


Fig. I-5 Conceptual chart of auto exposure mode

Photometric system : Lower-zone-weighted average metering

Operation : Under high illumination, the shutter speed is automatically adjusted to 1/250

sec.

Effect : To prevent the deterioration in resolution caused by the diffraction of small

irising. (The shutter speed is normally set at 1/50 sec.)

IRIS : Fixed

AGC : Fixed

Shutter speed : Automatically switched between 1/50 and 1/250 sec.

Manual shutter : Usable

BLC : Usable

### 2. Portrait mode

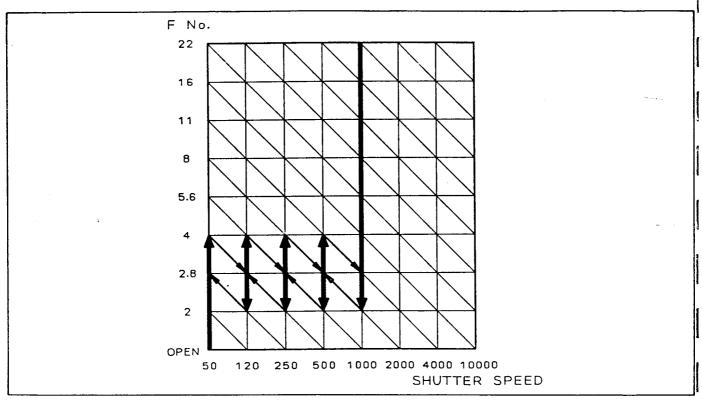


Fig. I-6 Conceptual chart of AE control in portrait mode

Photometric system : Lower-zone-weighted average metering

Operation : According to the exposure level, the shutter speed is automatically adjusted

within 1/50 - 1/1000.

Effect : To make a subject vividly, the iris is opened as much as possible.

IRIS : Fixed

AGC : Fixed

Shutter speed : Automatically switched between 1/50 to 1/1000 sec.

Manual shutter : Unusable

BLC : Unusable

# 3. Sand and snow mode

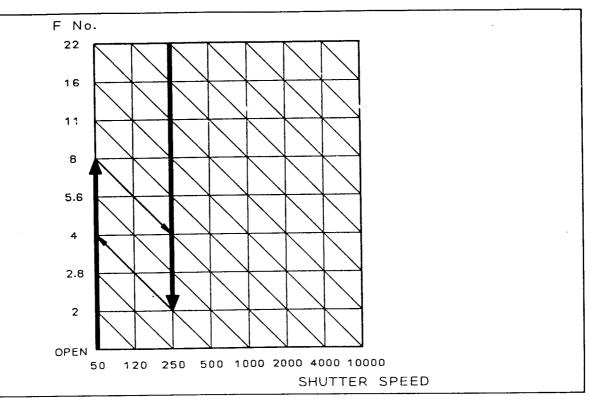


Fig. I-7 Conceptual chart of AE control in sand and snow mode

Photometric system : High luminance-weighted metering

Operation

: The luminance average of screen (48-divided) with high luminance is controlled in this mode. Furthermore, under high illumination, the shutter speed is automatically set to 1/250 sec. (If the iris is opened, it is decreased to 1/50 sec.)

Effect

: The subject with white background (Ski ground, beach, etc.) can be taken

effectively with proper brightness.

This mode is programmed to take a quickly moving subject under high illumination of outdoor so that the active resolution and small irising conditions can be upgraded.

IRIS

: Adjusted value  $\, \, ^{ \bigcirc } \,$  Upper limit

 $\mathsf{AGC}$ 

: Adjusted value  $\, \sim \,$  Upper limit

Shutter speed

: Automatically switched between 1/50 and 1/250 sec.

Manual shutter

: Unusable

BLC

: Unusable

#### 4. Spotlight mode

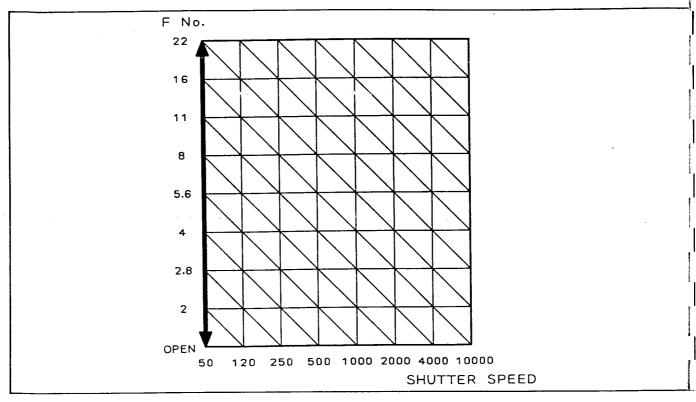


Fig. I-8 Conceptual chart of AE control in spotlight mode

Photometric system : Peak metering

Operation : The area of screen (48-divided) with the highest level is controlled to keep a

proper exposure.

Effect : The overexposure can be improved by this mode. (ex. pictures with a strong

contrast, comparatively small highlight area, etc.)

IRIS : Lower limit  $^{\circ}$  Adjusted value

AGC : Lower limit ∿ Adjusted value

Shutter speed : Fixed at 1/50 sec.

Manual shutter : Unusable

BLC : Unusable

- 3. Circuit Description
- 3-1 Power supply circuit
- 3-1-1 Kinds of power sources

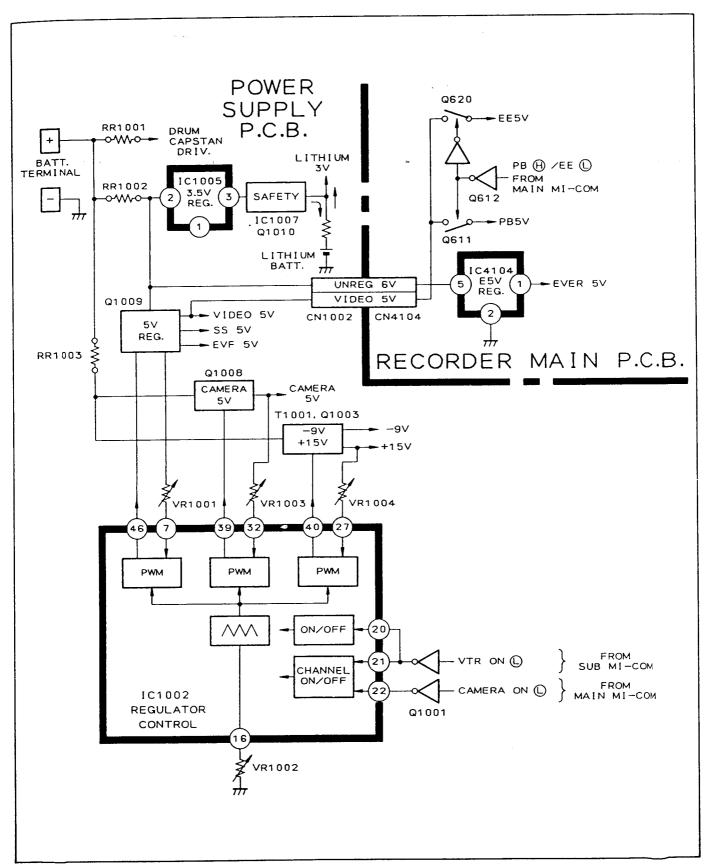


Fig. I-9

#### (1) EVER 5V

Serves primarily for supplying power to the SUB MI-COM IC4105.

- 1) The battery pack is loaded.
- 2) UNREG 6V is applied from the battery terminal of POWER SUPPLY P.C.B. to pin 5 of IC4104 on RECORDER MAIN P.C.B.
- 3) EVER 5V power is output from pin 1 of IC4104 on VS P.C.B.

#### (2) SS 5V

Serves as a power source for the MAIN MI-COM IC4102 and SYSCON-SERVO circuit. SS 5V power is always output while the POWER switch is turned on. The output sequence of SS 5V power is as follows:

- 1) The POWER switch is turned on.
- 2) VTR ON (H) is output from pin 31 of SUB MI-COM IC4105.
- 3) VTR ON (L) which is inverted at Q4111 is applied to IC1002 via Q1001 of POWER SUPPLY P.C.B.
- 4) The PWM circuit in IC1002 is driven to deliver the PWM signal from pin 46.
- 5) Q1009 is triggered on to output SS 5V power.

#### (3) CAMERA 5V

Serves to supply power to the camera and AF circuits. CAMERA 5V power is output when the CAMERA mode is selected. The output sequence of CAMERA 5V power is as follows:

- 1) CAMERA ON (L) is output from pin 38 of MAIN MI-COM IC4102.
- 2) CAMERA ON (L) is applied to IC1002 via Q1001 of POWER SUPPLY P.C.B.
- 3) The PWM circuit in IC1002 is driven to deliver the PWM signal from pin 39.
- 4) Q1008 is triggered on to output CAMERA 5V power.

#### (4) +15V and -9V

+15V power and -9V power are used to drive the CCD. These power voltages are output when the CAMERA Mode is selected. The output sequence of these power voltages is the same as that of CAMERA 5V.

## (5) VIDEO 5V

Serves as a power source for the video and audio circuits. VIDEO 5V power is always output while the POWER switch is turned on. The output sequence of VIDEO 5V power is the same as that of SS 5V.

# (6) EE 5V

Serves as a power source for the EE video circuit. EE 5V power is output when the CAMERA mode is selected. The output sequence of EE 5V power is as follows:

- 1) EE (L) is output from pin 9 of MAIN MI-COM IC4102.
- 2) EE (L) is applied via Q612 to trigger on Q620.
- 3) EE 5V power is output from Q620.

(7) PB 5V

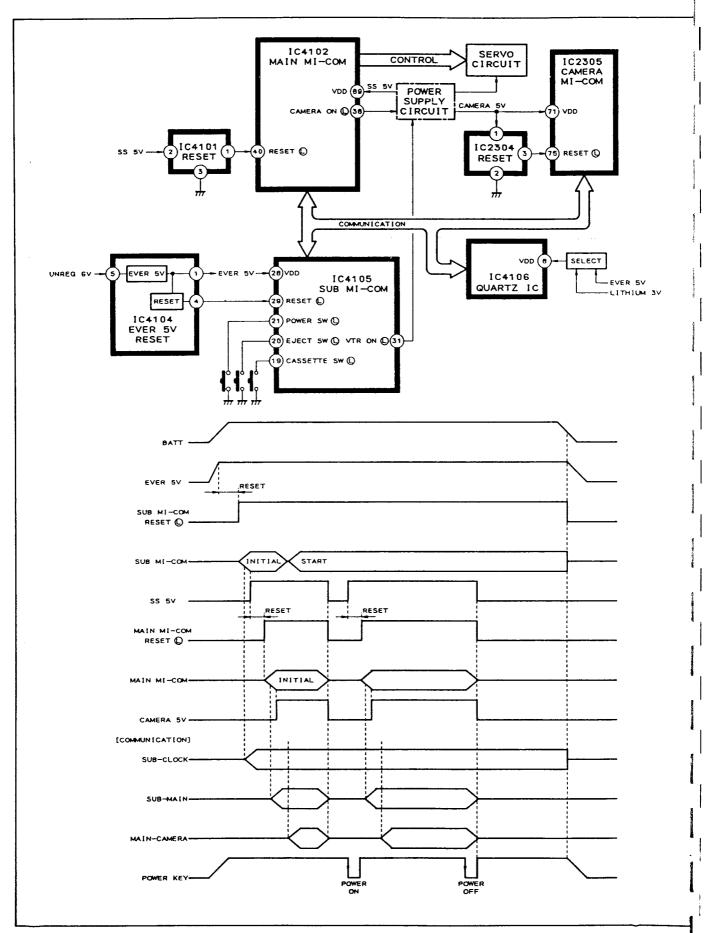
Serves as a power source for the PB video circuit. PB 5V power is output when the PLAY mode is selected. The output sequence of PB 5V power is the same as that of EE 5V.

(8) EVF 5V

Serves as a power source for the EVF circuit. EVF 5V power is always output while the POWER switch is turned on. The output sequence of EVF 5V power is the same as that of SS 5V.

(9) LITHIUM 3V

Serves as a backup power source for the quartz circuit. LITHIUM 3V power is supplied when the battery pack is unloaded. While the battery pack is not mounted, the lithium battery outputs 3V power for backing up the quartz circuit. When the battery pack is mounted, the lithium battery is charged with the regulated power from IC1005.



# (1) At battery mounted

When the battery source is mounted, the circuit operates as follows.

- 1) Battery terminal outputs the UNREG 6V.
- 2) E5V Regulator IC4104 outputs the EVER 5V from the pin 1.
- 3) Power voltage (EVER 5V) is supplied to the sub-microcomputer IC4105.
- 4) Sub-microcomputer IC4105 is reset during "L" period until the output from the pin 4 of Reset IC4105 rises, and then enters the initial operation.
- 5) Sub-microcomputer IC4105 outputs the VTR ON-H from the pin 31 to raise the SS5V for activating the main microcomputer IC4102 and the servo circuit, and starts communication with the Quartz IC4106.
- 6) Main microcomputer IC4102 is reset during "L" period until the output from the pin 1 of Reset IC4101 rises, and then enters the initial operation.
- 7) Main microcomputer IC4102 outputs the CAMERA ON-L signal from the pin 38 to raise the CAMERA 5V for activating the camera microcomputer.
- 8) Main microcomputer IC4102 checks the communication made between the camera and sub-microcomputers and the mechanical status so that it is kept to the proper position.
- 9) Main microcomputer IC4102 terminates the initial operation, and then the sub-microcomputer IC4105 turns off the SS5V. (Even after this, the sub-microcomputer keeps operation to accept the keys of Power, Eject and Cassette switches.)

#### (2) At power-on

When the power is turned on, the following operations are performed.

- 1) Pressing of Power key is detected when the pin 21 of sub-microcomputer IC4105 goes "L".
- 2) Sub-microcomputer IC4105 outputs the VTR ON-H from the pin 31 to raise the SS5V for activating the main microcomputer IC4102 and the servo circuit.
- 3) Main microcomputer IC4102 is reset during "L" period until the output from pin 1 of Reset IC4101 rises, and then enters the initial operation.
- 4) Main microcomputer IC4102 outputs the CAMERA ON-L signal from the pin 38 to raise the CAMERA 5V for activating the camera microcomputer.

# (3) At ejecting

If the Eject key is pressed with the battery source mounted, the power is turned on even when the power is turned off, and the ejecting operation is performed and then the power is turned off again.

- 1) Pressing of Power key is detected when the pin 21 of sub-microcomputer IC4105 goes "L".
- 2) Sub-microcomputer IC4105 outputs the VTR ON-H from the pin 31 to raise the SS5V for activating the main microcomputer IC4102 and the servo circuit.
- 3) Main microcomputer IC4102 is reset during "L" period until the outputs from the pin 1 of Reset IC4101 rises, and then enters the initial operation.

- 4) Main microcomputer IC4102 controls the mechanism so that the ejecting operation is properly performed.
- 5) Main microcomputer IC4102 terminates the operation control, and then the sub-microcomputer IC4105 turns off the SS5V.

  (Even after this, the sub-microcomputer keeps operation to accept the keys of Power, Eject and

Cassette switches.)

#### (4) AT cassette-in

If the cassette tape is loaded with the battery source is mounted, the power is turned on even when the power is turned off, and the loading operation is performed and then the power is turned off again.

The sub-microcomputer IC4105 detects the cassette-in status by "L" at pin 19. (The circuit operation after this detection is made in the same manner as the Ejecting.)

#### (5) At power-off

When the power is turned off, the following operations are performed.

- 1) Pressing of Power key is detected when the pin 21 of sub-microcomputer IC4105 goes "L".
- 2) Main microcomputer IC4102 sets the mechanical positions to the proper positions. Sub-microcomputer IC4105 turns off the SS5V. (Even after this, the sub-microcomputer keeps operation to accept the keys of Power, Eject and Cassette switches.)
- (6) At power-off (by other than power key)

If the battery source is dismounted during the power-on, the mode of microcomputer is irregulated, and the power is turned off. This causes the erroneous recording and/or erasure. To avoid this, when the power voltage drops, the control line of head amplifier is cut off.

- 1) EVER 5V decreases if the UNREG 6V decreases.
- 2) Reset IC4101 outputs "L" signal from the pin 1 when the EVER 5V is dropped to 4.5V.
- 3) REC AMP ON and FLYING ERASE ON signals are broken by the Q4106 and Q4109.

#### ;-2-1 General

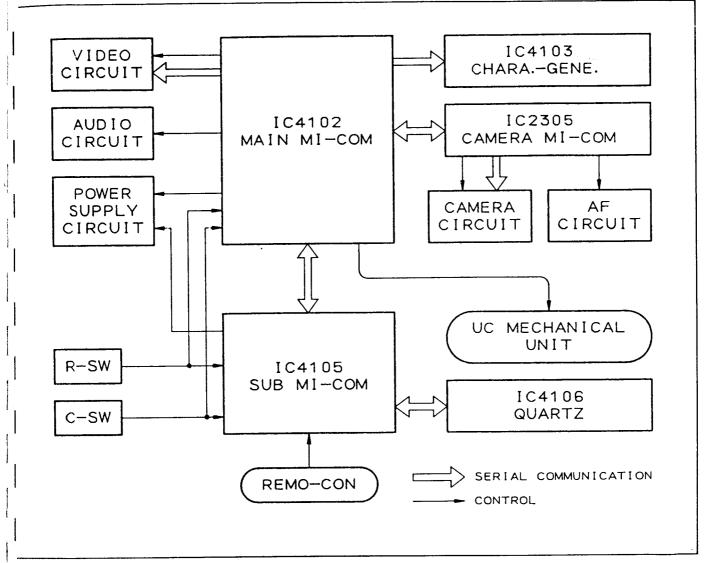


Fig. I-11

System control operations are carried out under control of the MAIN MI-COM IC4102, SUB MI-COM IC4105 and CAMERA MI-COM IC2305.

Listed below are the major control functions of each MI-COM.

- < MAIN MI-COM IC4102 >
  - ° Mode transition
  - ° Power supply circuit control
  - Recorder signal circuit control
  - Recorder mechanism unit control
  - ° Servo circuit control
- < SUB MI-COM IC4105 >
  - Power supply circuit control
  - ° Data writing for CHARA-GENE IC
- < CAMERA MI-COM IC2305>
  - ° Camera circuit control
  - Autofocus circuit control

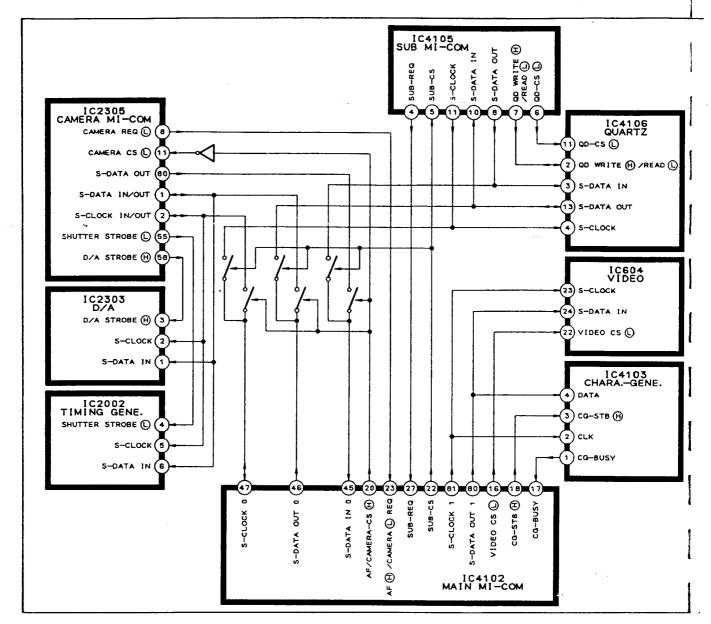


Fig. I-12

Figure I-11 shows the serial data communication circuit. The communication sequences are carried out under the aegis of MAIN MI-COM IC4102. The MAIN MI-COM IC4102 turns on/off the signal lines to each section using the relevant chip select signal.

Communication between the MAIN MI-COM IC and each section is performed with the following timing.

CAMERA MI-COM. IC ... The REQUEST signal is issued by the CAMERA MI-COM IC once during approx. 2V interval.

VIDEO IC ...... Communication is performed once during 1V interval.

QUARTZ IC .... Communication is performed while the MAIN MI-COM IC interchanges no signal wi chara GENE. IC any other section.

In addition to the above, the CAMERA MI-COM IC2305 communicates with the D/A converter and timing generator. Once during 1V interval, the CAMER MI-COM IC sends data to the D/A converter and timing generator.

# 3-2-3 Safety functions

(1) Detection of decrease in main battery voltage

The following three low levels of main battery are detectable during operation.

# UNDER CUT 1

When the voltage level of main battery decreases below 5.65 V for more than two seconds, the POWER LED INDICATOR (red or green) blinks and the 'BATT' warning message appears on the viewfinder screen. Under this condition, the key input and operation are not restricted (the normal operation can be continued).

In the circuit sequence, if the UNREG 6V power decreases below the predetermined voltage level, the low-voltage-level detecting signal at pin 14 of SUB MI-COM IC4105 goes 'Low' and the UNDER CUT 1 state is recognized in the microcomputer. Knowing this state through serial communication, the MAIN MI-COM IC changes the CHARA GENE data to indicate the 'BATT' warning on the viewfinder screen. At the same time, the POWER LED indicator is flashed by the LED signal output from pin 1 or 3 of SUB MI-COM IC4105.

# UNDER CUT 2

If the UNREG 6V power further decreases below  $5.45~\rm V$  for more than two seconds, the power-off state is taken automatically through the stop state.

In the same manner as for the UNDER CUT 1 condition, the low-voltage-level detecting signal at pin 14 of SUB MI-COM IC4105 goes "Low" and the UNDER CUT 2 state is recognized in the microcomputer.

## SHUT-OFF

If the UNREG 6V power drops rapidly to cause EVER 5V to become less than 4.5 V, the RESET IC4104 outputs  $^{\prime}$ L' signal. This resets the SUB MI-COM IC4105 to shut power off immediately.

#### (2) Dew condensation

The dew (moisture condensation) detecting function is provided to circumvent jamming of tape due to possible sticking. If moisture condensation is detected during operation, the LED indicator (red or green) blinks for warning. Also, 'DEW' blinks on the viewfinder screen to let the user know detection of moisture condensation. Under this condition, the mechanism is put in the stop state and the tape loading sequence is not carried out even if the tape cassette is inserted. Upon detection of moisture condensation, the one-hour timer of the microcomputer is made active to hold 'DEW' indication unless the power supply is disconnected. Under the 'DEW' condition, the cassette eject function is available for unloading with the drum stopped.

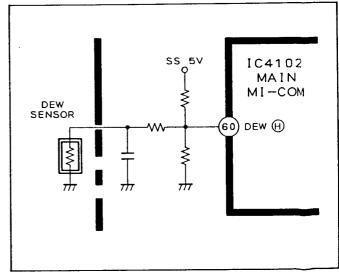


Fig. I-13

In the circuit operation, on occurrence of moisture condensation, the dew sensor equipped on the mechanical chassis increases its resistance to increase the DEW detection voltage applied to pin 60 of MAIN MI-COM IC4102. If the level of this voltage rises above the predetermined value, the MAIN MI-COM IC recognizes moisture condensation and carries out the relevant sequence.

#### (3) End-of-tape check

If the videotape is run beyond its end, the tape guide may be damaged or the head drum may be squeezed with the tape. To prevent such an event, the end-of-tape check is conducted to detect the end of tape during operation. Upon detection of the end of tape, the tape is stopped immediately.

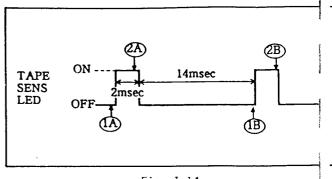


Fig. I-14

The end-of-tape detection LED indicator is turned on/off with the TAPE SENS LED signal appearing a pin 37 of MAIN MI-COM IC4102. In any mode, this LED indicator flashes in a cycle indicated in Fig. I-14. If the signal input across pins 55 and 56 goes 'High' twice in succession, the microcomputer recognizes the end of tape. A read-in of this signal is performed with timing 2A/2B indicated in Fig. I-14. If the 'High' state of signal is found with timing 1A/1B, the microcomputer judges that it is caused by external light. Thus, it cancels detection of the end of tape.

Also, if the EOT and BOT input signals go 'High' twice in succession, the microcomputer judges the the cassette is not loaded. In this case, 'TAPE' blinks on the viewfinder screen.

#### (4) Pause timer

In the REC PAUSE or STILL mode, the head drum rotates with the tape wound around it. If this condition persists for a certain period of time, the tape may wear or the head may be contaminated. To prevent this, if the REC PAUSE mode is kept for five minutes, it is automatically changed over the STOP mode and the power is turned off. If the STILL mode is kept for five minutes, it is automatically changed over to the STOP mode with the power being turned on.

# (5) Trouble stop (error)

If any trouble occurs in the rotation drive mechanism (drum, capstan, loader, reel), the tape may be jammed or the mechanism may be damaged. To prevent this, the fault control sequence specified for each mode is carried out upon detection of an error. In the event of trouble, the POWER LED indicator flashes and 'EJECT' blinks on the viewfinder screen for warning.

Table I-3

Event			Con	dition	Detection/Signal
Drum	1.	Error detection state	:	At start/normal operation	Pin 69 of MAIN
error	2.	FG frequency at normal	operation:	225 Hz	MI-COM IC4102
	3.	Error detection level			(D-FG)
		At start	:	Less than 112.5 Hz	
		At normal operation	:	Less than 22.5 Hz	
		At emergency	:	D-PWM on-period More than 93%	
	4.	<sup>†</sup> Error detection period		·	1
		At start	:	2 sec	
		At normal operation	:	0.5 sec	
		At emergency	· :	100 msec continuously after start-up	
Capstan	1.	Error detection state	:	At start/normal operation	Pin 70 of MAIN
error	2.	FG frequency at normal	operation:	1340 Hz	MI-COM IC4102
	3.	Error detection level			(C-FG)
		At start	:	Less than 268 Hz	
		At normal operation	:	Less than 54 Hz	
	4.	Error detection period	:	2 sec	
Reel	1.	Error detection mode	:	At normal operation	Pins 57 and 58 of
error	2.	Error detection	:	More than 2048 C-FG pulses in half	MAIN MI-COM
				cycle of takeup/supply reel FG	IC4102
				sequence	(S/T-REEL FG)
				(Only on the side of takeup reel)	Pin 70 of MAIN
					MI-COM IC4102
					(C-FG)
Loading	1.	Error detection state	:	At mode transition	Pins 16, 17 and
error	2.	Error detection	:	Proper positioning not accomplished	18 of MAIN MI-COM
				within a predetermined period of time	IC4102
				EJECT UNLOAD 2 sec	(MODE SW)
				UNLOAD STOP 5 sec	
	İ			STOP PINCH ON 2 sec	

Table I-4

### (Processing after error detection)

	CASSETTE-IN	LOADING	UNLOADING	TAPE	MODE TRANSITION
	CASSETTE-IN	in progress	in progress	RUNNING	in progress
Drum error	POP-UP	POP-UP	POP-UP	ERROR STOP 1	ERROR STOP 1
Capstan error	ERROR STOP 2	ERROR STOP 2	ERROR STOP 3	ERROR STOP 1	ERROR STOP 1
Reel error	-	-	ERROR STOP 3	ERROR STOP 1	ERROR STOP 1
Loading error	POP-UP	POP-UP	ERROR STOP 1	-	ERROR STOP 1

° POP-UP : Eject due to dew  $\rightarrow$  Eject due to dew  $\rightarrow$  POP-UP  $\rightarrow$  Error clear

\* ERROR STOP 1: Stop position (Error indication is cleared when the cassette tape is ejected or

the POWER key is turned off/on.)  $\rightarrow$  Error indication

° ERROR STOP 2: Stops at arbitrary position → (Error indication is cleared when the cassette tape is ejected or the POWER KEY is turned on/off)

\* ERROR STOP 3: Stop position

\* Note: In this camcorder, any error indication can be cleared by turning off/on the POWER key in addition to the above sequences.

# 3-3 Pin function of recorder ICs

# 3-3-1 Main microcomputer IC4102

Table I-5 (1/2)

Pin No.	Signal	1/0	Function
1	SEL1	-	Not used.
2	REC AMP ON (A)	0	Controls recording.
3	FE ON (B)	0	Goes "H" at flying erase head turned on.
4	DRUM ON (B)	0	Goes "H" at drum motor turned on.
5	DRUM BREAK	0	Controls braking of drum motor. "H" for brake.
6	PB (H) /REC (L)	0	Switches PB/REC mode.
7	DRUM REF.	0	Checks drum motor control.
8	CAMERA (H) /LINE (L)	0	Switches Camera/Line.
9	PB (D) /EE (D)	0	Switches PB/EE mode.
10	SP B /LP D	0	Switches SP/LP mode.
11	JOG (H)	0	Goes "H" for special playback.
12	VIDEO MUTE	0	Video muting. "H" for mute.
13	CAPSTAN ON .	0	Goes "H" at capstan motor turned on.
14	CAPSTAN FWD (1) /REV (1)	0	Controls rotation direction of Capstan motor.
14	CAPSTAN THE WINE W	"	"H" for clockwise. "L" for counterclockwise.
1.5	DICOLAY (I)	0	Controls mode indication on screen. "H" on screen.
15	DISPLAY (H)	0	Communication terminal for video IC serial data. (Chip select
16	VIDEO-CS CG-BUSY	I	Serial data communication terminal for Character Generator IC
	CG-BUST CG-STROBE	0	Gerral Gata communication terminal vol. Gray Gata
18	LOADING CONT. (H)	0	Controls loading limiter.
19	AF/CAMERA-CS (H)	0	Chip select for Camera/AF.
20		0	Jitter compensation.
21	JITTER ERROR MIX (H) SUB-CS (H)	0	Chip select for sub-microcomputer.
22	AF (H) /CAMERA (L) REQUEST	1	Communication request with Camera/AF.
23		I	Detects HiMP tape.
24	HiMP ()	I	Detects ME/MP tape.
25	MP (H) /ME (L)	I	Controls SW for recording stop. "H" for stop.
26	REC PROOF ①	1   I	Communication request with sub-microcomputer.
27	SUB-REQUEST	I	Community and request with sub-intersecting terms.
28	MODE SW 1	1   I	Detects mechanical status (position).
29	MODE SW 2	I	Detects mechanical status (position).
30	MODE SW 3	0	Audio muting. "H" for mute.
31	AUDIO MUTE (H)  ATF CONT.	0	Controls ATF pre-amplifier gain.
32		-	Controls with pre-amplituel gain.
33	GND	<del>  -</del>	
34	GND	<del> </del>	The state of the s
35	GND	<del>  -</del>	-
36	GND TARE LED (I)	0	Controls light emission of tape sensor LED.
37	TAPE LED (L)  CAMERA ON (L)	0	Controls camera power supply. "L" for ON.
38		1-	-
39	GND RESET ()	-   	Resets CPU. "L" for reset.
40		-	negota di di El Tori redet.
41	GND X'TAL IN	I	X'TAN IN
42		0	X'TAL OUT
43	X"TAL OUT	-	- TAL 001
44	GND S DATA IN O	- I	
45	S-DATA IN O	0	Serial data communication.
46	S-DATA OUT O	0	301 141 4414 COMMUNITAGE 20118
47	S-CLOCK 0	I	Detects Zoom Tele/Wide.
48	ZOOM KEY	1 	Detects AE SW.
49	AE KEY	<u> </u>	Not used.
50		<u> </u>	1.00. 0000.

Table I-5 (2/2)

Pin No.	Signal	1/0	Function
51	GND	-	
52	GND		_
53	V REF		A/D reference.
54	VDD	-	Analog power.
55	EOT SENS. (H)	I	Detects tape end. "H" for end.
56	BOT SENS. (H)	I	Detects tape top. "H" for top.
57	S REEL SENS	I	Detects supply reel FG.
58	T REEL SENS	I	Detects take-up reel FG.
59	GND	-	-
60	DEW (B)	I	Detects dew condensation.
61	SW POINT	1	Sets switching point.
62	ATF ERROR	I	Input of ATF error voltage.
63	Hi8 DET (A)	I	Detects Hi8 mode.
64	SP/LP DET	I	Detects SP/LP mode. "H" for SP, "L" for LP.
65	C LOG (H)	I	Detects unrecorded portion of tape. "H" at detected.
66	C-SYNC	I	Input of composite sync. signal.
67	RF SWITCHING PULSE	Ī	Head switching pulse.
68	DRUM PG	I	Input of drum motor PG signal.
69	DRUM FG	I	Input of drum motor FG signal.
70	CAPSTAN FG	I	Input of capstan motor FG signal.
71	NC NC		-
72	NC		-
73	LOAD (f)	0	Loading command. "H" for loading.
74	UNLOAD (H)	0	Unloading command. "H" for unloading.
	CAPSTAN PWM	0	PwM output of capstan error signal.
76	DRUM PWM	0	PwM output of drum error signal.
77	ACK	I	Input of detection signal for automatic chrominance killer.
78	CAPSTAN FG	Ī	Input of capstan FG signal.
79	COMP. IN	I	Detects composite.
80	S-DATA OUT 1	0	Serial data communication.
81	S-CLOCK 1	0	
82	Hi8 (H) /NORMAL (L)	0	Controls Hi8/Normal.
83	HiMP ()	0	Controls HiMP.
84	MP B /ME D	0	Controls ME/MP.
85	ATF REF.	0	ATF reference signal.
86	S DET (H)	I	Detects S input.
87		-   I	Loading motor sensor.
	LOADING SENS.		
88 	GND VDD	<del>-   -</del>	Power supply.
90	-	<del>-   -</del>	- coopyrj.
91	CH-4 SW		
92	CH-3 SW	0	Crosstalk protection for other heads.
93		0	"H" for mute.
94	CH-2 SW	0	
95	<del></del>	10	Jitter compensation.
	V MASK	0	Outputs pseudo-V pulse.
96	JOG VD		Outputs 1/2-frequency switching pulse.
97	1/2 SW PULSE	0	
98	SW PULSE	0	Outputs switching pulse.  Switches fH/3fH of ATF. "L" for f1 and f3. "H" for f2 and f4
99	ATF SW	0	
100	SEL2		Not used.

Table I-6

Pin No.	Signal	1/0	Function
1	R LED (H)	0	"H" for Camera mode.
2	C LED (B)	0	"H" for Playback mode.
3	TALLY (B)	0	Controls light emission of tally LED.
4	SUB-REQ	0	Serial data communication.
5	SUB-CS	1	
6	QD-CS (L)	0	Serial data communication.
7	QD WRITE (H) /READ (L)		
8	S-DATA OUT	0	Serial data communication.
9	NC	-	_
10	S-DATA IN	I	Serial data communication.
11	S-CLOCK	0	
12	VSS	_	Connected with ground.
13	V REF	<u> </u>	Power supply.
14	BATT	I	Detects insufficient power voltage.
15	KEY 1	I	Detects kinds of key pressed.
16	NC		-
17	KEY 2	<b>↓</b> ,	Detects key.
18	KEY +/-		1
19	CASSETTE IN ()	I	Detects garage-down switch status. "L" at detected.
20	EJECT SW (L)	I	Detects eject switch status. "L" at detected.
21	POWER SW (L)	I	Detects power switch status. "L" at detected.
22	TRIGGER SW (L)	I	Detects trigger switch status. "L" at detected.
23	NC	<u> </u>	-
24	REMO-CON DATA	I	Inputs data from wireless remote controller.
25	NC	<u> </u> -	-
26	X'TAL OUT	0	X'TAL connection.
27	X'TAL IN	I	
28	VDD	_	Power supply.
29	RESET ()	I	Reset terminal. "L" for reset.
30	VDD	-	Power supply.
31	VTR ON (H)	0	Controls power supply for recorder section. "H" at ON.
32	NC	-	-

# CONTENTS

# CHAPTER II. DISASSEMBLING/ADJUSTMENTS

1.	Before Disassembling/Adjustments	
1-1	Maintenance tools and supplies	<u></u>
1-1-1	List of maintenance tools and supplies	<b>I</b> - 1
1-1-2	2 List of extension cables	II - 2
2.	Disassembling	
2-1	Cover disassembling	
2-1-1		
2-1-2		
2-1-3		
2-1-4	· · · · · · · · · · · · · · · · · · ·	
2-1-5		
2-1-6	·	
2-1-7	•	
2-2	Interior disassembling	
2-2-1		
2-2-2		_
2-2-3	Removal of JACK and POWER SUPPLY P.C.B	1 - 5
2-2-4	Removal of recorder holders and RECORDER MAIN P.C.B	[]-5
2-2-5	Removal of CCD assembly	[]-6
2-2-6	Disassembling of POWER SUPPLY P.C.B	1 - 6
2-2-7	7 Instruction for supplies	[] - 6
2-3	Lens section disassembling	I - 7
2-3-1	Removal of motors	[]-7
2-3-2	Removal of front lens assembly, internal lens group and IG meter	[]-7
2-3-3	3 Instruction for supplies	[] - 7
2-4	List of external screws	II - 8
3.	Setting	
3-1	Extension of connector cables	
3-2	Camera/autofocus circuit adjustment	
3-3	Settings for power supply and audio adjustment	
3-4	Recorder circuit adjustment	I -1
4.	Service Modes	
4 - 1	How to set service modes	
4-2	Service mode 1 (Not used)	11 — 1
4-3	Service mode 2 (Camera adjustments)	
4 - 4	Service mode 3 (AF adjustments)	11 -1
4-5	Service mode 4 (Not used)	11 - 1
4-6	Service mode 5 (Shifts duty ratio of switching pulse for	_
	recorder adjustments)	
4-7	Service mode 6 (Power-save/destination)	
4-8	Service mode 7	1 -17

5.	Electrical Adjustments of Camera Section	
5-1	Clock frequency adjustment	
5-2	PLL adjustment	
5-3	CCD reset adjustment	
5-4	CCD sub-voltage adjustment	
5-5	Iris encoder adjustment	
5-6	Setup level adjustment	
5-7	Black level take-in adjustment	
5-8	Burst level adjustment	
5-9	White clip adjustment	
5-10	Iris adjustment	
5-11	AGC adjustment	
5-12	Aperture adjustment	
5-13	Y level adjustment	
5-14	Color difference simultaneity adjustment	
5-15	Preset white adjustment	
5-16 5-17	Color balance adjustment	
5-18	White balance 5200 adjustment	
5-19	White balance 3200 adjustment	
5-20	White level take-in 3200 adjustment	
5-21	White level take-in 5600 adjustment Locations of TPs and VRs	
, , ,	LOCALIONS OF IT'S did 41/5	11 — 24
6.	Electrical Adjustments of AF Section	
6-1	Offset adjustment	וו סב
6-2	AF BPF adjustment	
6-3	AF ES take-in adjustment	
6-4	CZ adjustment	
6-5	Locations of TPs and VRs	11 - 27
6-5	Locations of TPs and VRs	<b>□</b> −27
6-5 7.		Ⅱ -27
	Electrical Adjustments of Recorder Section	
7.	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment	li — 28
7. 7-1	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment	II — 28 II — 28
7. 7-1 7-2	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment	II — 28 II — 28 II — 28
7. 7-1 7-2 7-3	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment	II — 28 II — 28 II — 28 II — 28
7. 7-1 7-2 7-3 7-4 7-5 7-6	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment CAMERA 5 V adjustment Undercut/destination adjustment Switching point adjustment	II — 28 II — 28 II — 28 II — 28 II — 28 II — 28
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment CAMERA 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment	II — 28 II — 29
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment Jitter error correction (UCS1A only)	II - 28 II - 29 II - 29 II - 29
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment CAMERA 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment Jitter error correction (UCS1A only) VIDEO AGC adjustment	II - 28 II - 29 II - 29 II - 29 II - 29
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment Jitter error correction (UCS1A only) VIDEO AGC adjustment REC Y level adjustment	II - 28 II - 29
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment CAMERA 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment Jitter error correction (UCS1A only) VIDEO AGC adjustment REC Y level adjustment Y FM carrier (normal) adjustment	II - 28 II - 29 II - 29 II - 29 II - 29 II - 30
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment Jitter error correction (UCS1A only) VIDEO AGC adjustment REC Y level adjustment Y FM carrier (normal) adjustment Y FM deviation (normal) adjustment	II - 28 II - 29 II - 29 II - 29 II - 29 II - 30 II - 30
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment Jitter error correction (UCS1A only) VIDEO AGC adjustment REC Y level adjustment Y FM carrier (normal) adjustment Y FM deviation (normal) adjustment Y FM carrier (Hi8) adjustment	II - 28 II - 29 II - 29 II - 29 II - 29 II - 30 II - 30 II - 30
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment Jitter error correction (UCS1A only) VIDEO AGC adjustment REC Y level adjustment Y FM carrier (normal) adjustment Y FM deviation (normal) adjustment Y FM carrier (Hi8) adjustment Y FM deviation (Hi8) adjustment	II - 28 II - 29 II - 29 II - 29 II - 30 II - 30 II - 30 II - 30
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15	Electrical Adjustments of Recorder Section  Switching frequency (power supply) adjustment  +15.5 V adjustment  VIDEO 5 V adjustment  CAMERA 5 V adjustment  Undercut/destination adjustment  Switching point adjustment  Jitter error bias adjustment  Jitter error correction (UCS1A only)  VIDEO AGC adjustment  REC Y level adjustment  Y FM carrier (normal) adjustment  Y FM deviation (normal) adjustment  Y FM carrier (Hi8) adjustment  Y FM deviation (Hi8) adjustment  Recording current Y adjustment	II - 28 II - 29 II - 29 II - 29 II - 30
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15 7-16	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment CAMERA 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment Jitter error correction (UCS1A only) VIDEO AGC adjustment REC Y level adjustment Y FM carrier (normal) adjustment Y FM deviation (normal) adjustment Y FM carrier (Hi8) adjustment Y FM deviation (Hi8) adjustment Recording current Y adjustment Recording current Y adjustment	II - 28 II - 29 II - 29 II - 29 II - 29 II - 30 II - 31
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15 7-16 7-17	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment CAMERA 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment Jitter error correction (UCS1A only) VIDEO AGC adjustment REC Y level adjustment Y FM carrier (normal) adjustment Y FM deviation (normal) adjustment Y FM deviation (Hi8) adjustment Recording current Y adjustment Recording current AUDIO adjustment Recording current AUDIO adjustment	II - 28 II - 29 II - 29 II - 29 II - 30 II - 30 II - 30 II - 31 II - 31
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15 7-16	Electrical Adjustments of Recorder Section  Switching frequency (power supply) adjustment  +15.5 V adjustment  VIDEO 5 V adjustment  Undercut/destination adjustment  Switching point adjustment  Jitter error bias adjustment  Jitter error correction (UCS1A only)  VIDEO AGC adjustment  REC Y level adjustment  Y FM carrier (normal) adjustment  Y FM deviation (normal) adjustment  Y FM deviation (Hi8) adjustment  Recording current Y adjustment  Recording current AUDIO adjustment  Recording current ATF adjustment  Recording current C adjustment	II - 28 II - 29 II - 29 II - 29 II - 29 II - 30 II - 30 II - 31 II - 31 II - 31 II - 32
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15 7-16 7-17 7-18	Electrical Adjustments of Recorder Section  Switching frequency (power supply) adjustment  +15.5 V adjustment  VIDEO 5 V adjustment  Undercut/destination adjustment  Switching point adjustment  Jitter error bias adjustment  Jitter error correction (UCS1A only)  VIDEO AGC adjustment  REC Y level adjustment  Y FM carrier (normal) adjustment  Y FM deviation (normal) adjustment  Y FM deviation (Hi8) adjustment  Recording current Y adjustment  Recording current AUDIO adjustment  Recording current ATF adjustment  Recording current C adjustment  Recording current C adjustment	II - 28 II - 29 II - 29 II - 29 II - 30 II - 30 II - 30 II - 31 II - 31 II - 31 II - 32 II - 32
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15 7-16 7-17 7-18 7-19	Electrical Adjustments of Recorder Section  Switching frequency (power supply) adjustment  +15.5 V adjustment  VIDEO 5 V adjustment  CAMERA 5 V adjustment  Undercut/destination adjustment  Switching point adjustment  Jitter error bias adjustment  Jitter error correction (UCS1A only)  VIDEO AGC adjustment  REC Y level adjustment  Y FM carrier (normal) adjustment  Y FM deviation (normal) adjustment  Y FM deviation (Hi8) adjustment  Y FM deviation (Hi8) adjustment  Recording current Y adjustment  Recording current AUDIO adjustment  Recording current C adjustment  Recording current C adjustment  PB Y1 level adjustment  PB Y2 level adjustment	II - 28 II - 29 II - 29 II - 29 II - 30 II - 30 II - 30 II - 31 II - 31 II - 31 II - 31 II - 32 II - 32 II - 33
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15 7-16 7-17 7-18 7-19 7-20	Electrical Adjustments of Recorder Section  Switching frequency (power supply) adjustment  +15.5 V adjustment  VIDEO 5 V adjustment  CAMERA 5 V adjustment  Undercut/destination adjustment  Switching point adjustment  Jitter error bias adjustment  Jitter error correction (UCS1A only)  VIDEO AGC adjustment  REC Y level adjustment  Y FM carrier (normal) adjustment  Y FM deviation (normal) adjustment  Y FM deviation (Hi8) adjustment  Y FM deviation (Hi8) adjustment  Recording current Y adjustment  Recording current AUDIO adjustment  Recording current C adjustment  Recording current C adjustment  PB Y1 level adjustment  PB Y2 level adjustment  Y/C separation adjustment	-28
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15 7-16 7-17 7-18 7-19 7-20 7-21	Electrical Adjustments of Recorder Section  Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment  CAMERA 5 V adjustment  Undercut/destination adjustment  Switching point adjustment  Jitter error bias adjustment  Jitter error correction (UCS1A only)  VIDEO AGC adjustment  Y FM carrier (normal) adjustment  Y FM deviation (normal) adjustment  Y FM deviation (normal) adjustment  Y FM deviation (Hi8) adjustment  Recording current Y adjustment  Recording current AUDIO adjustment  Recording current C adjustment  Recording current C adjustment  PB Y1 level adjustment  PB Y2 level adjustment  Y/C separation adjustment  JOG chrominance phase adjustment	II - 28 II - 29 II - 29 II - 29 II - 30 II - 30 II - 30 II - 31 II - 31 II - 31 II - 32 II - 32 II - 33 II - 33 II - 33
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15 7-16 7-17 7-18 7-19 7-20 7-21 7-22	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment CAMERA 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment Jitter error correction (UCS1A only) VIDEO AGC adjustment Y FM carrier (normal) adjustment Y FM deviation (normal) adjustment Y FM deviation (normal) adjustment Recording current Y adjustment Recording current AUDIO adjustment Recording current AUDIO adjustment Recording current C adjustment Recording current C adjustment Recording current AUDIO adjustment Recording current AUDIO adjustment Recording current AUDIO adjustment Recording current AUDIO adjustment PB Y1 level adjustment PB Y2 level adjustment JOG chrominance phase adjustment JOG chrominance phase adjustment	II - 28 II - 29 II - 29 II - 29 II - 30 II - 30 II - 30 II - 31 II - 31 II - 31 II - 32 II - 32 II - 33 II - 33 II - 33
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15 7-16 7-17 7-18 7-19 7-20 7-21 7-22 7-23	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment CAMERA 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment Jitter error bias adjustment VIDEO AGC adjustment REC Y level adjustment Y FM carrier (normal) adjustment Y FM deviation (normal) adjustment Y FM deviation (normal) adjustment Y FM deviation (Hi8) adjustment Recording current Y adjustment Recording current AUDIO adjustment Recording current C adjustment Recording current C adjustment PB Y1 level adjustment PB Y2 level adjustment JOG chrominance phase adjustment Playback peaking adjustment Generated character position adjustment	II - 28 II - 29 II - 29 II - 29 II - 30 II - 30 II - 30 II - 31 II - 31 II - 31 II - 31 II - 33
7. 7-1 7-2 7-3 7-4 7-5 7-6 7-7 7-8 7-9 7-10 7-11 7-12 7-13 7-14 7-15 7-16 7-17 7-18 7-19 7-20 7-21 7-22 7-23 7-24	Electrical Adjustments of Recorder Section Switching frequency (power supply) adjustment +15.5 V adjustment VIDEO 5 V adjustment CAMERA 5 V adjustment Undercut/destination adjustment Switching point adjustment Jitter error bias adjustment Jitter error correction (UCS1A only) VIDEO AGC adjustment Y FM carrier (normal) adjustment Y FM deviation (normal) adjustment Y FM deviation (normal) adjustment Recording current Y adjustment Recording current AUDIO adjustment Recording current AUDIO adjustment Recording current C adjustment Recording current C adjustment Recording current AUDIO adjustment Recording current AUDIO adjustment Recording current AUDIO adjustment Recording current AUDIO adjustment PB Y1 level adjustment PB Y2 level adjustment JOG chrominance phase adjustment JOG chrominance phase adjustment	II - 28 II - 29 II - 29 II - 29 II - 30 II - 30 II - 30 II - 31 II - 31 II - 31 II - 32 II - 33 II - 33 II - 33 II - 33 II - 34 II - 34

8.	Adjustments of Electronic Viewfinder	
8-1	Adjustments of Electronic Viewfinder  Free-run frequency adjustment	-38
8-2	Vertical amplitude adjustmentll	-38
8-3	Rotation and centering adjustmentl	-38
8-4	Brightness adjustment	-38
8-5	Focus adjustment	-38
8-6	Locations of TPs and VRs	<b>-38</b>
9.	Adjustment of Recorder Mechanism	
10.	Checking and Adjusting Items after Replacing Main Parts	

# CHAPTER II. DISASSEMBLING/ADJUSTMENTS

# 1. Before Disassembling/Adjustments

## 1-1 Maintenance tools and supplies

## 1-1-1 List of maintenance tools and supplies

Table II-1

#### Maintenance tools

DESCRIPTION	TOOL NO.	REMARKS
Alignment tape (V sweep)	DY9-1111-500	
Alignment tape (stereo)	DY9-1291-000	
Extension cable	DY9-1261-000	
Extension cable	DY9-1283-000	New
Extension cable	DY9-1284-000	New
Extension cable	DY9-1285-000	New
Extension cable	DY9-1288-000	New
Y/C separator	DY9-1093-000	
Color bar chart	DY9-2002-000	
Gray scale chart	DY9-2005-000	
Adjusting screwdriver (2.6 mm)	DY9-2021-000	
Phillips screwdriver (2 bits only)	DY9-2030-000	
Adjusting screwdriver (1.8 mm)	DY9-2041-000	
Color chart viewer (5600°K)	DY9-2039-100-100	
View lamp (5600°K)	DY9-2040-000	
CCA 12 filter ø46	DY9-2046-000	

Table II-2

#### Supplies

DESCRIPTION	TOOL NO.	REMARKS		
Grease GE-X8	CY9-8044-000			
Teflon Fluorocarbon Resin MP-102	DY9-3013-000			
Dia Bond 1663	DY9-3008-000			
Floil G-474B	DY9-3024-000			
Grease LT-SH	CY9-8033-000			
Floil G902	DY9-3017-000			
Grease GE-C9	CY9-8043-000			

<sup>\*</sup> Note: For recorder mechanism, refer to the mechanism manual for the UC mechanical chassis (DY8-3391-504-201) separately issued.

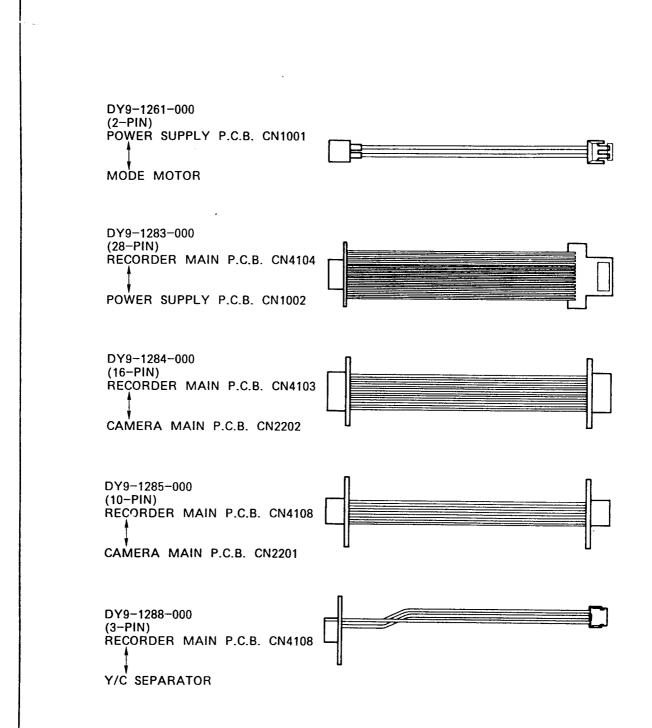


Fig. II-1

#### Disassembling

#### 2-1 Cover disassembling

# -1-1 Removal of LS cover and cassette cover (Fig. II-2)

- (1) Loosen two screws (a), and remove the LS cover.
- (2) Set the EJECT state.
- (3) Loosen two screws (b), and open the cassette cover.
- (4) Loosen one screw c, remove the flexible cable clamp plate, and detach the flexible cable from the connector.
- \* Note: In reassembling, push in the flexible cable toward the cassette cover side after mounting the flexible cable clamp plate.

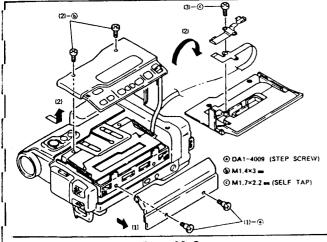


Fig. II-2

# 2-1-2 Removal of rear cover 1 and rear cover 2 (Fig. II-3)

- (1) Turn up the electronic viewfinder.
- (2) Loosen five screws (d) and three screws (e).
- (3) Remove the rear cover (1) and rear cover (2).

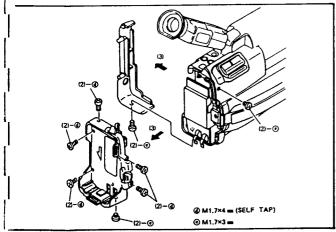


Fig. II-3

## 2-1-3 Removal of left cover (Fig. II-4)

- Remove the START/STOP switch by pressing its retaining tab.
- (2) Loosen two screws (d) and two screws (g).
- (3) Remove the left cover.

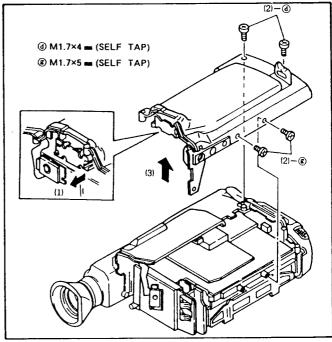


Fig. II-4

# 2-1-4 Removal of top cover (Fig. II-5)

- (1) Remove one screw (d) and one screw (g).
- (2) Unplug connectors CN600 and CN4105.
- (3) Disengage dowel (A), and remove the top cover.

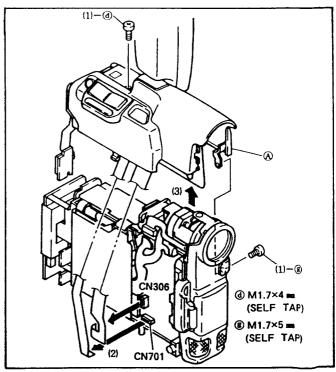


Fig. II-5

## 2-1-5 Removal of front cover (Fig. II-6)

- (1) Open the AV cover.
- (2) Loosen two screws (f) and one screw (d).
- (3) Remove the front cover.
- (4) Detach the microphone.

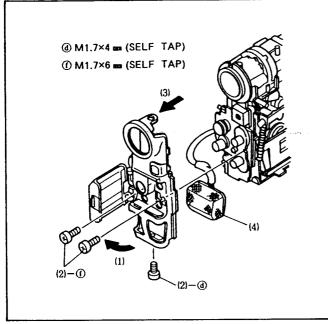


Fig. II-6

## 2-1-6 Disassembling of top cover (Fig. II-7)

- (1) Loosen three screws (d).
- (2) While disengaging claw (A), take out the electronic viewfinder.
- \* Note: Exercise care not to disconnect or damage the flexible cable.
- (3) Loosen six screws (d).
- (4) Remove the switch part and zoom key.
- (5) Loosen three screws (d).
- (6) Detach the drum cover sheet, and remove the camera key unit.

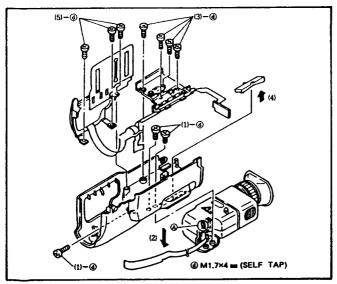


Fig. II-7

# 2-1-7 Disassembling of electronic viewfinder (Fig. II-8)

- (1) Demount the electronic viewfinder.
- (2) Loosen two screws (h).
- (3) Remove the EVF clamp plate, ball and spring.
- (4) Remove the EVF holder and click spring.
- (5) Loosen two screws (h) and one screw (q).
- (6) Separate the EVF upper cover from the lower cover. (The EVF upper and lower covers are secured to each other at five claw positions A). For separating these covers, expand then to unhook claw positions.)
- (7) Remove the EVF P.C.B.

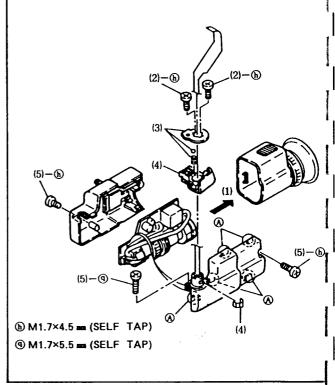


Fig. II-8

#### -2 Interior disassembling

## 2-2-1 Removal of lens unit (Fig. II-9)

- (1) Unplug connectors CN2001 and CN2401.
- (2) Loosen three screws (d).
- (3) Remove the lens unit.

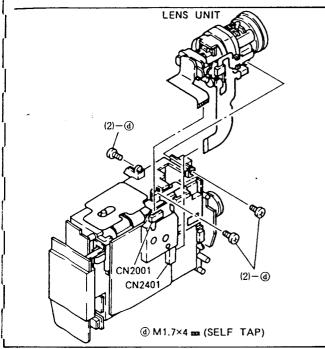


Fig. II-9

# L-2-2 Removal of CAMERA MAIN P.C.B. (Fig. II-10)

- (1) Loosen one screw (i).
- (2) Remove the CAMERA MAIN P.C.B.

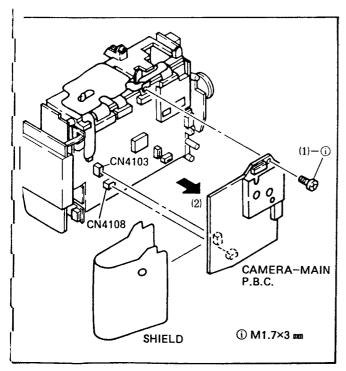


Fig. II-10

# 2-2-3 Removal of JACK and POWER SUPPLY P.C.B. (Fig. II-11)

- (1) Loosen one screw (j) and one screw (i).
- (2) Remove the POWER SUPPLY P.C.B.
- (3) Loosen three screws (d).
- (4) Unplug connector CN1001.
- (5) Remove the JACK P.C.B.
- (6) Loosen one screw (d) and one screw (i).
- (7) Remove the AUDIO P.C.B.

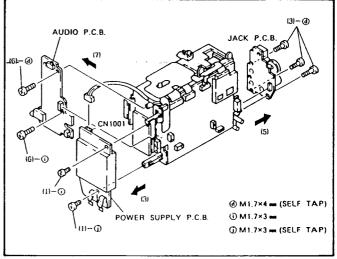


Fig. II-11

# 2-2-4 Removal of recorder holders and RECORDER MAIN P.C.B. (Fig. II-12)

- (1) Remove the shield 1.
- (2) Remove two screws (K).
- (3) To dismount the recorder main P.C.B., remove the CNs501, 4101, 4102, 4106, 4201 and 4202.
- (4) To remove the power supply holder, audio holder and recorder holders (1) and (2), loosen four screws (1).
- (5) To remove the recorder holder, loosen three screws (m).

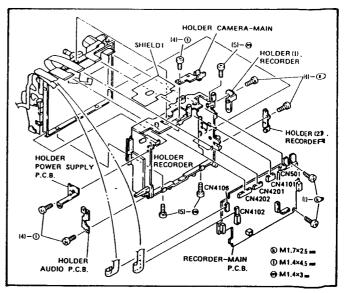


Fig. II-12

# 2-2-5 Removal of CCD assembly (Fig. II-13)

- (1) Loosen two screws (d).
- (2) Remove the CCD assembly, rubber spacer and crystal filter assembly.

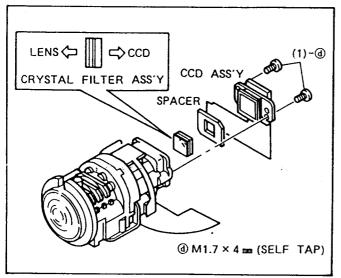


Fig. II-13

# 2-2-6 Disassembling of POWER SUPPLY P.C.B. (Fig. II-14)

- (1) Unsolder four points (A), and remove shield case 2.
- (2) Unsolder one point (B), and remove shield case 1.

# Handling of lithium battery:

- Carry out soldering within 5 seconds at a soldering iron temperature of 350°C or within 10 seconds at 260°C.
- The battery must not be heated to 100°C or higher. A reverse voltage must not be applied to it. Do not short-circuit the battery. Otherwise, leakage, burst or firing might occur.

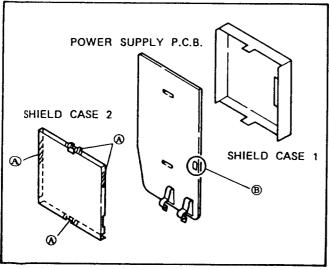


Fig. II-14

# 2-2-7 Instruction for supplies (Fig. II-15)

In reassembling, use the following supplies at points shown in Fig. II-15.

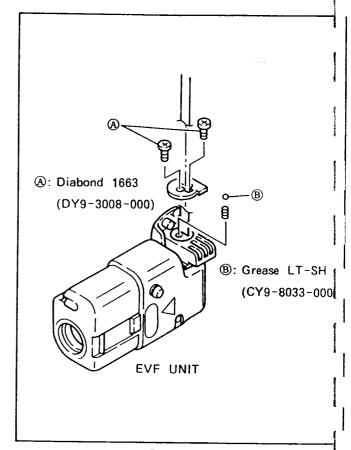


Fig. II-15

## 2-3 Lens section disassembling

## 2-ر-1 Removal of motors (Fig. II-16)

) Unplug connector CN (A).

) Loosen six screws (n) and one screw (o).

(3) Remove the AF and PZ motors together with the flexible cables.

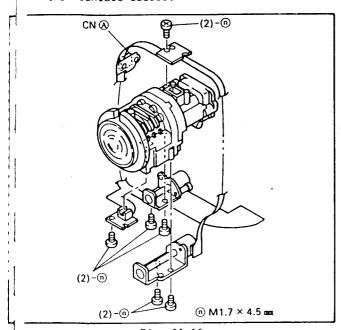


Fig. II-16

# 2-3-2 Removal of front lens assembly, internal lens group and IG meter (Fig. II-17)

- (1) Detach the flexible cable of IG meter from the dowel.
- 2) Loosen two screws (p).
- 3) Remove the zoom lens group.
- (4) Remove two bars.
- 5) Take out the afocal unit frontward.
- 6) Remove two bars and the focal lens group.

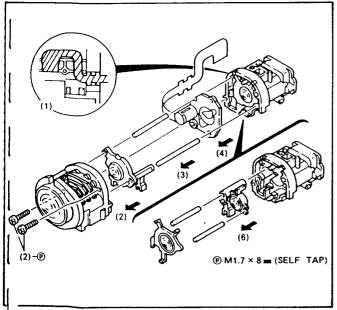


Fig. II-17

#### 2-3-3 Instruction for supplies (Fig. II-18)

After cleaning or replacement, use the following supplies at points shown in Fig. II-18.

- (A) Floil G-474B (DY9-3024-000)
- B Mixture of grease GE-C9 (CY9-8043-000) and grease GE-X8 (CY9-8044-000) in a ratio of: GE-C9: GE-X8 = 1: 2 (in weight ratio)

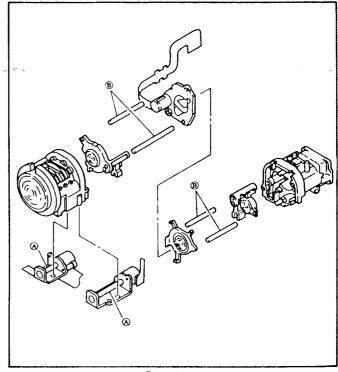


Fig. II-18

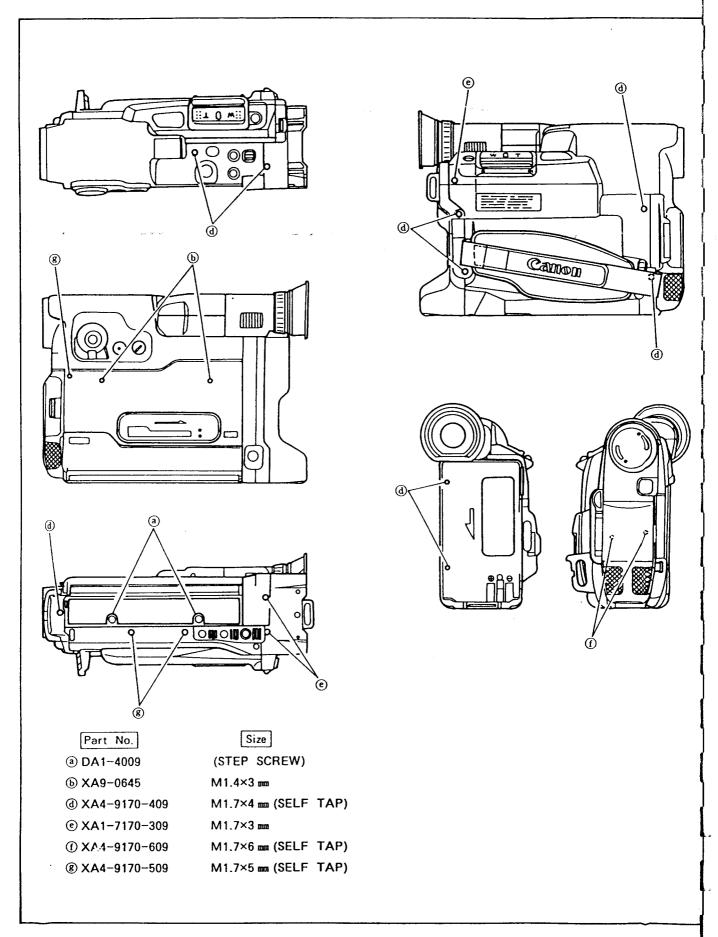


Fig. II-19

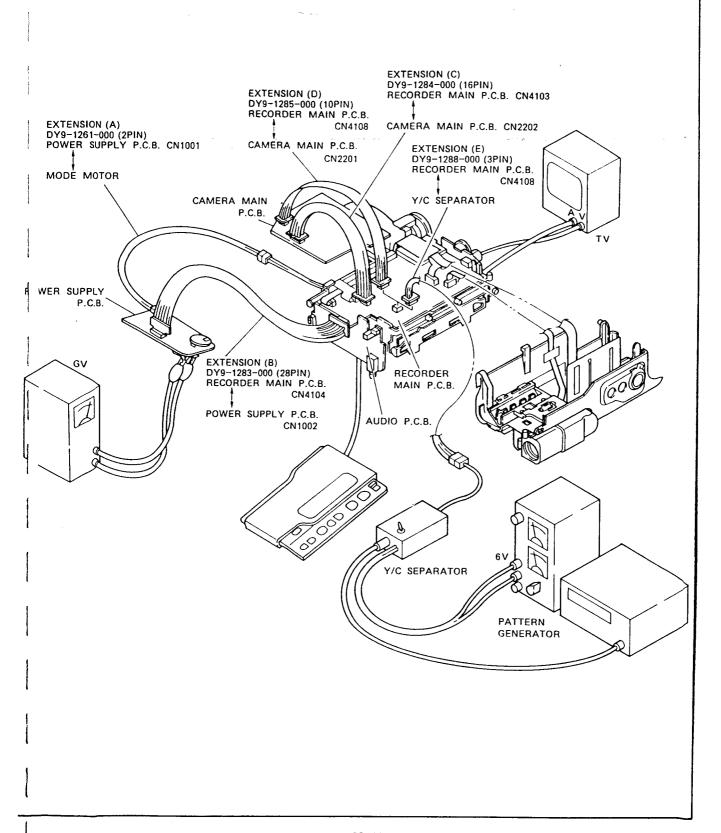


Fig. II-20

# 3-2 Camera/autofocus circuit adjustment

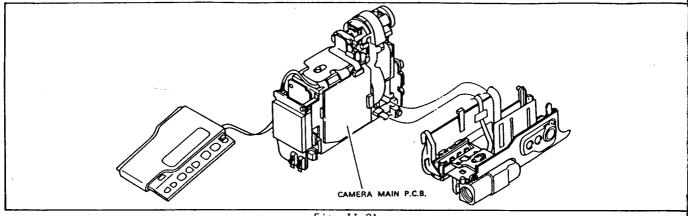


Fig. II-21

For adjustment of the camera/autofocus circuit, it is not required to use the extension cable in principle.

When conducting ES offset adjustment for the autofocus circuit, however, remove the CAMERA MAIN P.C.B. from the RECORDER MAIN P.C.B. (since the measurement point is located on the back side of CAMERA MAIN P.C.B.). Then, extend the lead wire from the measurement point or connect the extension cable (C) or (D) so that the back side of CAMERA MAIN P.C.B. can be measured.

In addition to general-purpose measuring instruments such as a regulated power supply unit, prepare the following items for camera/autofocus circuit adjustment.

- ° Gray scale chart
- ° Color bar chart
- ° Siemens chart
- °CZ adjustment chart (Prepare this chart referring to Fig. II-22.)
- ° Color viewer 5600K
- ° CCA12 filter

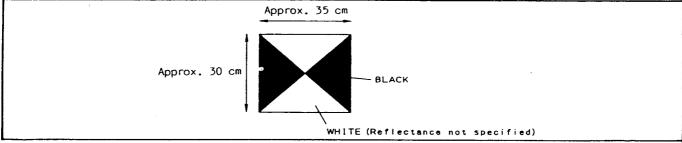


Fig. II-22

#### Precautions:

- (1) Before attempting adjustment, warm up the instruments for at least three minutes.
- (2) Standard angle of veiw
  - ° The standard angle of view is obtained when the test chart is displayed over the entire screen of full scan monitor.
  - $^{\circ}$  When checking on an oscilloscope, make adjustment so that the gray scale section will be 36  $\mu$ s. or the color bar section will be 52  $\mu$ s.
  - \* When using other chart, align the center at the standard angle of view that has been set with the gray scale or color bar chart.
  - It is advisable to shoot the chart from a distance of approx. 1.4 meters unless otherwise specified.

# 3.3 Settings for power supply and audio adjustment

For adjustments for the power supply and audio ction, use the extension cables (A) and (B). ...en, remove the POWER SUPPLY P.C.B. from the RECORDER MAIN P.C.B.

so, for the adjustment of power supply, detach the shield plate from the POWER SUPPLY P.C.B. pefore the adjustment.

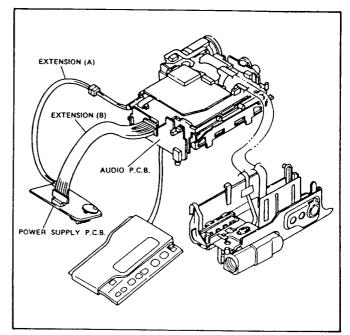


Fig. II-23

# Recorder circuit adjustment

Adjust the recorder circuit with the CAMERA MAIN C.B. removed.

Adjust the recording system with the Y/C Separator nnected to the CN4108 of RECORDER MAIN P.C.B. Y9-1093-000) via the Extension Cable E.

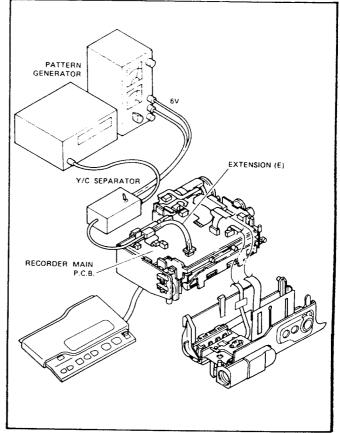


Fig. II-24

# How to use Y/C separator

 Connect the Y/C Separator as shown in the Figure II-24.
 Then turn on the power switch of camcorder and set the CAMERA mode.

2) Set the switch of Y/C Separator to C.

- 3) Set the Signal Generator to White 100% output status.
- 4) Observing the output from the pin 1 of CN4108 (RECORDER MAIN P.C.B.), adjust the output VR of Signal Generator until it becomes 500 mVp-p.
- 5) Observing the output from the pin 2 of CN4108 (RECORDER MAIN P.C.B.), adjust the VR101 of Y/C Separator until the burst signal becomes 143 mVp-p.

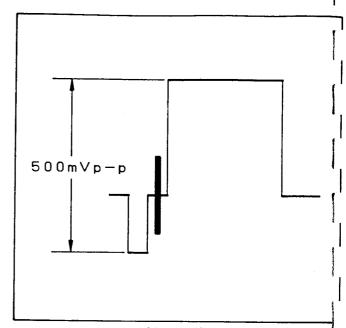
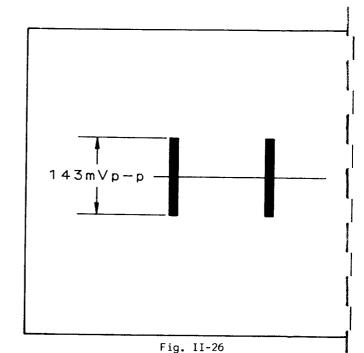


Fig. II-25



#### Service Modes

#### 1-1 How to set service modes

ne normal mode can be switched to the service modes (SERV 1 to SERV 7) by short-circuiting the patterns of the remote controllers. The positions to be short-circuited are also shown in ig. II-27. (The remote controller WL-1 also has patterns but no hole in its outer casing. Therefore, use the conventional remote controller pecified in Fig. II-27.)

The remote controllers are classified as service arts.

Example: WL-600 (DY2-1294-000)

vitching between the normal mode and service modes or among the service modes occurs each time the Service Mode key is pressed. (Fig. II-28)

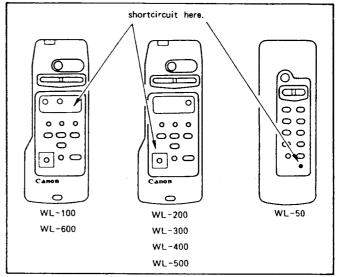


Fig. II-27

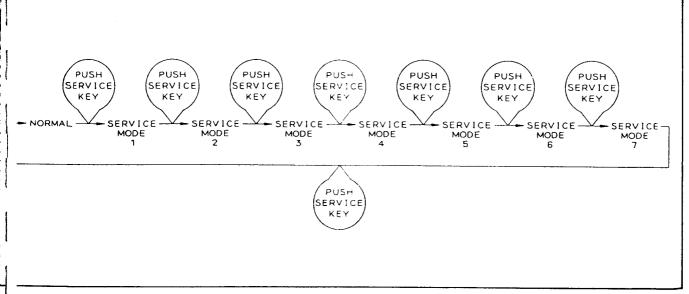


Fig. II-28

# 2 Service mode 1 (Not used)

For inspection at factory.

inis mode is not applicable to servicing.

# 4-3 Service mode 2 (Camera adjustments)

This mode is used for adjustment of the camera section.

For adjustment/setting, the following keys are available.

#### (Main unit)

 $^{\circ}$  PAUSE key ...... Moves the arrow down. (Bring the arrow to an address to be selected.)

 $^{\circ}$  START/STOP key .. Moves the arrow up.

### (Remote controller)

 $^{\circ}$  PLAY key ...... Goes to the next page.

 $^{\circ}$  STOP key ...... Returns to the previous page.

 $^{\circ}$  PAUSE key ...... Moves the arrow down. (Bring the arrow to an address to be selected.)

 $^{\circ}$  START/STOP key .. Moves the arrow up.

° FF key ...... Used to change data.

(Pressing this key increments a data value.)

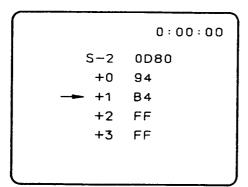
 $^{\circ}$  REW key ...... Used to change data.

(Pressing this key decrements

a data value).

 $^{\circ}$  REC key ...... Used to write data into the memory.

\* After changing data, be sure to write it into the memory using the REC key.



In Figure II-29, the currently selected line (marked with the arrow) has the following meaning;

→ (+1) Address indication Data (OD81)

After writing, 'G' is indicated at the right of data.

Fig. II-29

Table II-3

Address	Adjustment item	Doto		
0D80	CCD reset	Data		
0000	Cob reset	Specified value		
0D81	OD81 CCD sub-voltage			
	oob oob vortage	Specified value		
0D84	Iris encoder 1	Automatic		
""	1.13 chewer 1	4		
0085	Iris encoder 2	adjustment Automatic		
0005	1113 encoder 2	1		
0D86	Iris encoder 3	adjustment		
0000	Tris encoder 5	Automatic		
0D87	Iris encoder 4	adjustment		
0007	1715 encoder 4	Automatic		
0D88	Cotton land	adjustment		
<del></del>	Setup level	Adjustment		
0D89	Black level take-in	Automatic		
0000	D 1	adjustment		
008C	Burst level	Adjustment '		
008D	White clip	Adjustment		
OD8E	Auto iris	Adjustment		
OD8F	AGC	Adjustment		
0D90	Y1 gain	Adjustment		
0D91	Y2 gain	Adjustment		
0D92	Y level	Adjustment		
0094	0D94   Color difference simulta-			
	neity			
0D96	R gain	Adjustment		
0D97	B gain	Adjustment		
0D98	R-Y gain	Adjustment		
0D99	B-Y gain	Adjustment		
OD9A	R-Y hue	Adjustment		
0D9B	B-Y hue	Adjustment		
OD9C	R control, 5600°K	Adjustment		
OD9D	B control, 5600°K	Adjustment		
OD9E	R control, 3200°K	Adjustment		
0D9F	B control, 3200°K	Adjustment		
ODA0	White level take-in, 3200°K	Automatic		
<u> </u>		adjustment		
ODA1	White level take-in, 5600°K	Automatic		
l		adjustment		
ODA2	AF BPF	Adjustment		
ODA3	ES offset	Adjustment		

# 4-4 Service mode 3 (AF adjustments)

This mode is used for AF adjustment.

Pressing the COUNTER RESET key of remote controller in service mode 3 enables CZ adjustment.

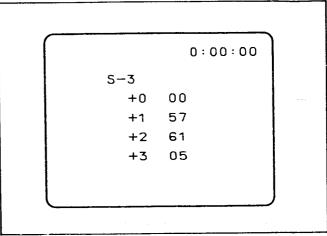
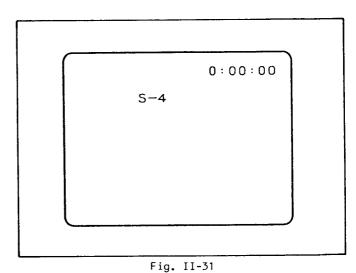


Fig. II-30

# 1-5 Service mode 4 (Not used)

This mode is not applicable to servicing.



# 4-6 Service mode 5 (Shifts duty ratio of switching pulse for recorder adjustments)

This mode is used for tape pass adjustment of the recorder mechanism.

Pressing of MODE SELECT SW in service mode 5 sets the PLAY mode, and then the condition I is established by pressing the PLAY key. Each time the keys STOP, MODE SELECT SW (for CAMERA mode), '+', etc. are pressed as indicated below, the condition I, II or III is set up in a cyclic manner.

## Conditions:

II.

I. Shifts duty ratio of switching pulse by 75% off-tracking.

- \*Procedures: 1) Push the STOP key.
  - 2) Set the CAMERA mode by the MODE SELECT SW.
  - 3) Push the counter reset key of the wireless remote controller.
  - 4) Set the PLAY mode by the MODE SELECT SW.
  - 5) Push the PLAY key.
- II. Shifts duty ratio of switching pulse by 100% on-tracking.

Perform the \*Procedures.

- III. Normal duty ratio of switching pulse. Perform the \*Procedures.
  - I. Shifts duty ratio of switching pulse by 75% off-tracking.

Pressing of REC key of wireless remote controller in I mode increases the shift amount, and pressing of STILL key decreases it.

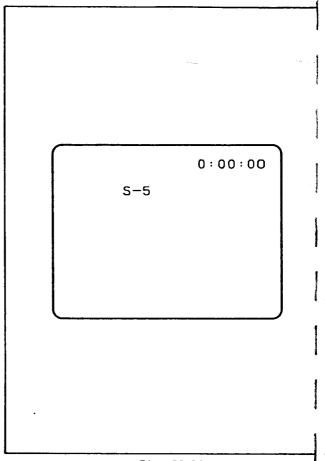


Fig. II-32

#### A-7 Service mode 6 (Power-save/destination)

mis mode is used for power-saving/destination setting.

r adjustment/setting, the following keys are available.

(Remote controller)

COUNTER RESET key ... Used to wire data into the memory or change the place-of-destination setting.

\* TAPE RETURN key ..... Writing of insufficient power voltage data

## Service mode 7

is mode indicates the current error occurred in a unit.

`a numbers of each data denotes the following rors.

08 : EOT

09 : BOT

OB : Trouble Eject

81 : Loading Motor error

82 : Drum Motor error

83 : Capstan Motor error

84 : T reel error

85 : S reel error

In the data other than the above is displayed, it is used for our plant. (not usable for rvicing)

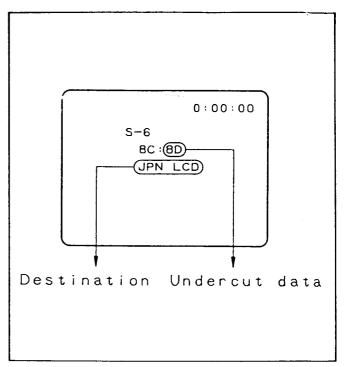


Fig. II-33

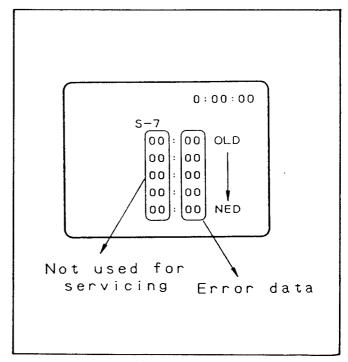


Fig. II-34

#### 5. Electrical Adjustments of Camera Section

Electrical adjustment of the camera section should be carried out in the sequence of the following items. If any item is adjusted, all the subsequent items should be adjusted also.

### 5-1 Clock frequency adjustment

M. EQ.	Frequency counter						
	bte: Connect the frequency counter						
	through the oscilloscope.						
TP/TRIG.	C-MAIN P.C.B. TP2005 (CL)						
ADJ.	C-MAIN P.C.B. VC2001 (CL)						
SPEC.	14187500 <u>+</u> 30 Hz						

## 5-2 PLL adjustment

M. EQ.	Digital voltmeter
TP/TRIG.	C-MAIN P.C.B. TP2007 (PLL)
ADJ.	C-MAIN P.C.B. VC2002 (PLL)
SPEC.	2.5 <u>+</u> 0.2 V

#### 5-3 CCD reset adjustment

MODE	Service mode 2
ADJ.	OD80 (data address)
SPEC.	Select data according to the numeral (0 to 7) indicated on the back of CCD. e.g. If '5F' is indicated on the back of CCD, select data corresponding to '5' from the table shown below.

Data table:

0	1A	2	57	4	94	6	D2
1	39	3	76	5	В3	7	F1

# 5-4 CCD sub-voltage adjustment

MODE	DDE Service mode 2					
ADJ.	0D81 (data address)					
SPEC.	Select data according to the alphabetic					
	character (E to Z) indicated on the					
	back of CCD.					
	e.g. If '5F' is indicated on the back					
İ	of CCD, select data corresponding					
	to 'F' from the table shown below.					

Data table:

E	QO	L	4E	S	90	Υ	D5
F	18	М	59	T	9B	Z	E1
G	23	N	64	U	A5		1
Н	2E	Р	6F	٧	B4		
J	39	Q	7C	W	BF		
К	44	R	84	Х	СВ		

#### 5-5 Iris encoder adjustment

MODE	Service mode 2		
ADJ.	OD84, OD85, OD86, OD87 (data address)		

#### Procedures:

- (1) Connect the positive polarity terminal of the regulated power supply to TP2301 (IRIS) and the negative polarity terminal to TP220 (GND).
- (2) Set the regulated power supply to 5.0 ± 0.1 V, and open the iris fully. Then, wait for five seconds or more.
- (3) Select data address '0D84', and press the REC key of remote controller (to write data into the memory).
- (4) Select data address '0D85'.
- (5) Set the regulated power supply to 1.6 ± 0.1 V, and close the iris fully. Then, wait for five seconds or more.
- (6) Press the REC key of remote controller. If 'N' is indicated at this step, go back to step (2).
- (7) Select data address 'OD86', and press the REC key of remote controller. If 'N' is indicated at this step, go back to step (2).
- (8) Select data address '0D87'.
- (9) Set the regulated power supply to 5.0 ± 0.1 V, and open the iris fully. Then, wait for five seconds or more.
- (10) Press the REC key of remote controller. If 'N' is indicated at this step, go back to step (2).

# 5-6 Setup level adjustment

	CHART	Lens capped
ł	MODE	Service mode 2
'	M. EQ.	Oscilloscope
	TP/TRIG.	C-MAIN P.C.B. TP2204 (Y)
1	ADJ.	OD88 (data address)
, F	SPEC.	0 + 1 mV

# Procedures:

- (1) Set the data so that the waveform of luminance signal is higher than the blanking level by 30 mV (approx.). (See the Fig. A)
- (2) Check the center of waveform (noise).

  (See the line B)
- (3) Set the data so that the center of waveform is lowered to the blanking level. (See the Fig. C)
- \* Note: The excessive lowering of waveform makes the waveform disappear together with a noise. (See the Fig. D)

  Be sure to stop it where the noise is eliminated by half (approx.).

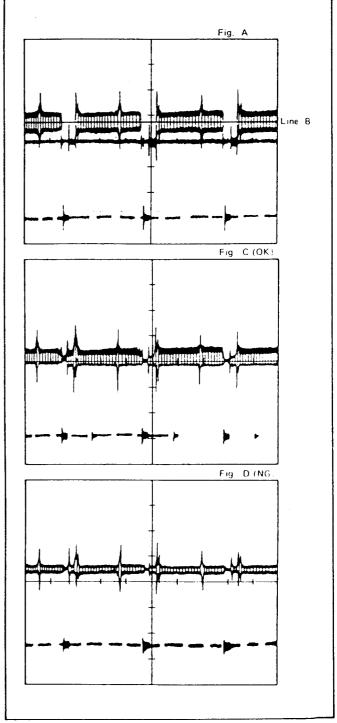


Fig. II-35

20 Lisec/5 mV

# 5-7 Black level take-in adjustment

CHART	Lens capped	
MODE	Service mode 2	
ADJ.	OD89 (data address)	
SPEC.	Only writing with the REC key	
	(automatic adjustment	

# 5-8 Burst level adjustment

CHART	Lens capped
MODE	Service mode 2
M. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. TP2205 (C)
ADJ.	OD8C (data address)
SPEC.	150 <u>+</u> 10 mVp-p

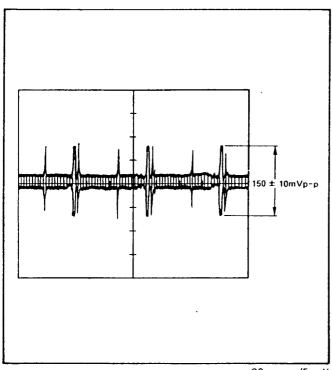
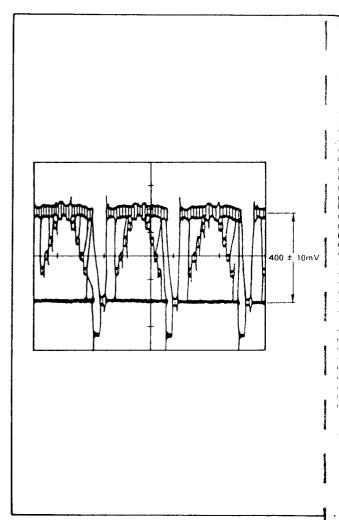


Fig. II-36 20 µsec/5 mV

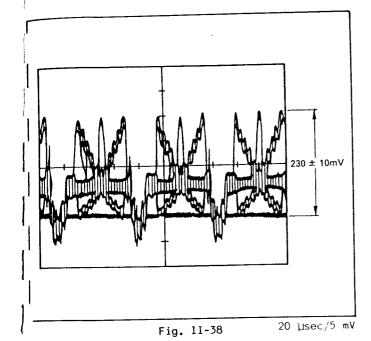
# 5-9 White clip adjustment

CHART	Gray scale (5600°K)
MODE	Service mode 2
M. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. TP2204 (Y)
ADJ.	OD8D (data address)
SPEC.	400 + 10 mV



# 10 Iris adjustment محمر

CHART	Gray scale (5600°K)
MODE	Service mode 2
	Oscilloscope
	C-MAIN P.C.B. TP2101 (CS)
	OD8E (data address)
	230 + 10 mV



# 5-11 AGC adjustment

-		
	CHART	Gray scale (5600°K)
( '	MODE	Service mode 2
		Oscilloscope
	TP/TRIG.	C-MAIN P.C.B. TP2201 (YH)
١	ADJ.	OD8F (data address)
	SPEC.	220 ± 10 mV

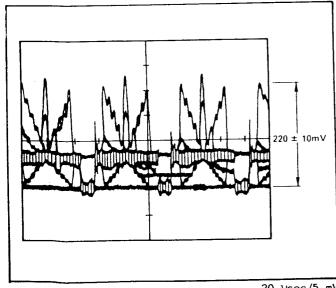


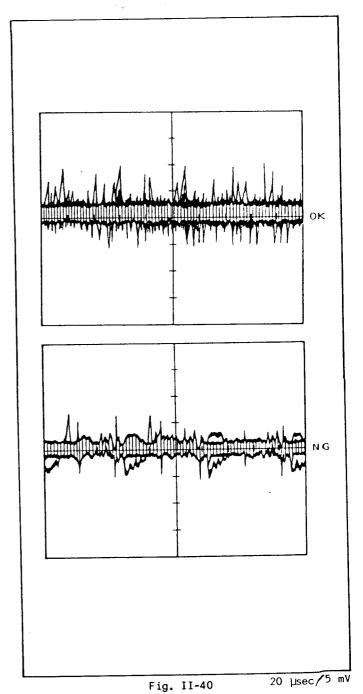
Fig. II-39 20 µsec/5 mV

# 5-12 Aperture adjustment

CHART	Gray scale (5600°K)
MODE	Service mode 2
M. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. TP2206 (VAPC)
ADJ.	OD90, OD91 (data address)
SPEC.	Video signal minimized (minimum level).

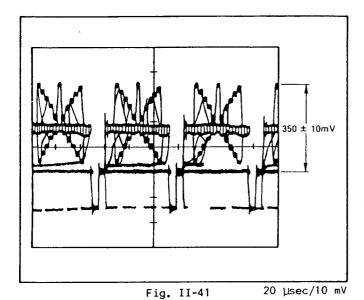
#### Procedures:

- On the oscilloscope, observe a signal appearing at TP2206 (VAPC).
- (2) Select data address '0090', and change data so that the video signal will be minimized.
- (3) Select data address '0D91', and change data so that the video signal will be minimized.



## 5-13 Y level adjustment

CHART	Gray scale (5600°K)
MODE	Service mode 2
M. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. TP2204 (Y)
ADJ.	OD92 (data address)
SPEC.	350 <u>+</u> 10 mV



# 5-14 Color difference simultaneity adjustment

CHART	Color bar (5600°K)
M0DE	Service mode 2
M. EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	OD94 (data address)
SPEC.	BD

# Procedures:

- (1) Select the data address "OD94", and set the data to "BD".
- (2) Check if there is no split of bright dots appearing on the vectorscope.

# 5-15 Preset white adjustment

CHART	Color bar (5600°K)
MODE	Service mode 2
M. EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	OD96, OD97 (data address)
SPEC.	Bright point aligned with center.

# Procedures:

- (1) Select data address '0D96', and change data so that the bright point will be centered direction A.
- (2) Select data address '0D97', and change data so that the bright point will be centered direction B.

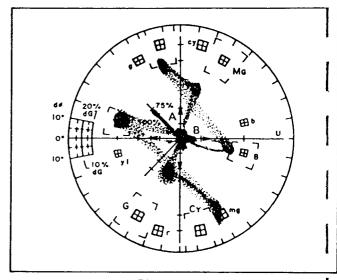


Fig. II-42

# 5-16 Color balance adjustment

CHART	Color bar (5600°K)		
MODE	Service mode 2		
M. EQ.	Vectorscope		
TP/TRIG.	VIDEO OUT		
ADJ.	OD98, OD99 Gain		
	0D9A, 0D9B Hue		
1	(data address)		
SPEC.	Gain (with respect to burst)	Hue	
. '	R: 2.0 times	R:	103°
	Ye: 1.6 times	Ye:	160°

\* Note: After color balance adjustment, be sure to perform the preset white adjustment (5-15). (If deviation is found, repeat adjustment until it is eliminated.)

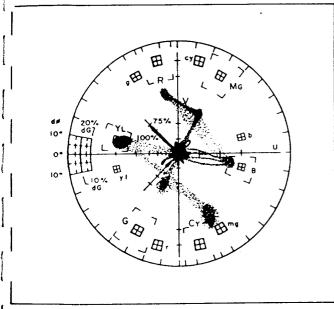


Fig. II-43

## 5-17 White balance 5200 adjustment

CHART	Light box (5600°K)
MODE	Service mode 2
M. EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	OD9C, OD9D (data address)
SPEC.	Bright point aligned with center.

#### Procedures:

- (1) Select data address 'OD9C', and change data so that the bright point will be centered in direction A.
- (2) Select data address 'OD9D', and change data so that the bright point will be centered in direction B.

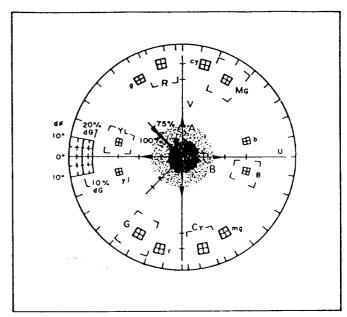


Fig. II-44

## 5-18 White balance 3200 adjustment

CHART	Light box (5600°K) + CCA12	
MODE Service mode 2		
M. EQ.	Vectorscope	
TP/TRIG. VIDEO OUT		
ADJ.	OD9E, OD9F (data address)	
SPEC.	Bright point aligned with center.	

#### Procedures

- (1) Select data address 'OD9E', and change data so that the bright point will be centered in direction A.
- (2) Select data address 'OD9E', and change data so that the bright point will be centered in direction B.

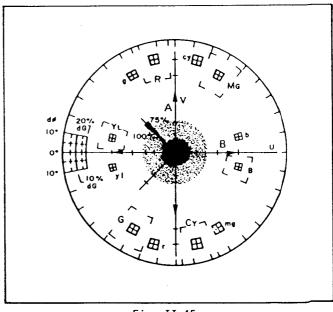


Fig. II-45

## 5-19 White level take-in 3200 adjustment

CHART	Light box (5600°K) + CCA12	
MODE	Service mode 2	
ADJ.	ODAO (data address)	
SPEC.	SPEC. Only writing with the REC key.	
	(automatic adjustment)	

## 5-20 White level take-in 5600 adjustment

CHART	Light box (5600°K)	
MODE	Service mode 2	
ADJ.	ODA2 (data address)	
SPEC.	Only writing with the REC key. (automatic adjustment)	

## 5-21 Locations of TPs and VRs

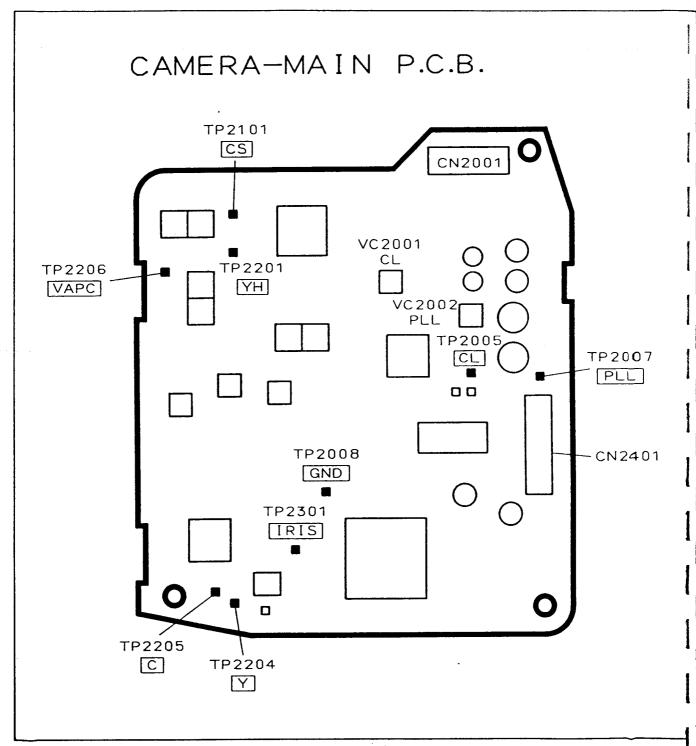


Fig. II-46

# Electrical Adjustments of AF Section

Ine following items 6-2, 6-3 and 6-4 (AF adjustment) should be carried out after completing lectrical adjustment of the camera section.

Iso, if any electrical adjustment of the camera section has been made, be sure to carry out items 1-2, 6-3 and 6-4.

# r-1 Offset adjustment

m. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. IC2401 - pin 41.
	C-MAIN P.C.B. FL2401 - pin 2
	C-MAIN P.C.B. VR2401 (OFFSET)
SPEC.	DC voltage difference: 0 + 10 mV

#### ¹rocedures:

- (1) Short across pin 3 and pin 40 of IC2401.
- (2) Measure a difference in DC voltage applied between pin 41 of IC2401 and pin 2 of FL2401. Adjust VR2401 so that this voltage difference will be 0 ± 10 mV.

#### 6-2 AF BPF adjustment

CHART	Siemens chart	
MODE	Service mode 2	
M. EQ.	Digital voltmeter	
TP/TRIG.	C-MAIN P.C.B. IC2401 - pin 35 (ES)	
ADJ.	ADJ. ODA2 (data address)	
SPEC.	DC voltage value minimized	

# Procedures:

- Shoot the Siemens chart and bring its pattern image into focus manually.
- (2) Select data address 'ODA2', and change data so that a DC voltage appearing at pin 35 of IC2401 will be minimized.
- \* Note: After this adjustment, be sure to carry out adjustment items 6-3 and 6-4 (AF ES take-in, CZ adjustments).

# 6-3 AF ES take-in adjustment

CHART	Light box (5600°K)	
MODE	Service mode 2	
ADJ.	ODA3 (data address)	
SPEC. Only writing with the REC key.		
	(automatic adjustment)	

#### Procedures:

- Shoot the light box, and defocus its image to maximum manually.
- (2) Select data address 'ODA3' and press the REC kev.

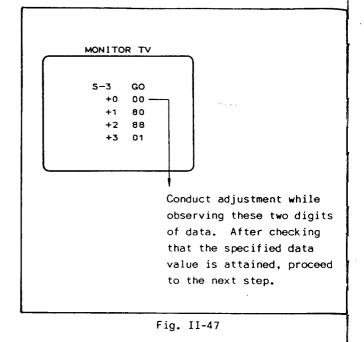
## 6-4 CZ adjustment

CHART	RT CZ adjustment chart/Siemens chart	
MODE	Service mode 3	
M. EQ.	Monitor TV	

CZ adjustment can be accomplished automatically just by pressing the AF ON/OFF key while observing data on the MONITOR TV.

#### Preparations:

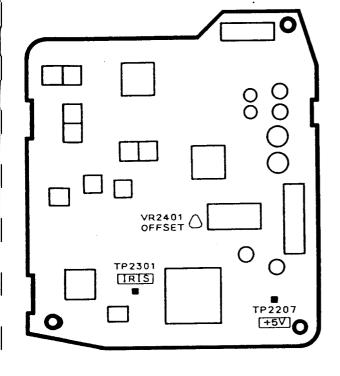
- (1) Shortcircuit across TP2301 (IRIS) and TP2207 (+5V) on the C-MAIN P.C.B. (This step is not required if the indoor illumination is turned off.)
- (2)- Provide a distance of 2.40 ± 0.02 m between the front lens and the test chart. (Use the Siemens chart only for focus checking and manual focusing. For other purposes, use the CZ adjustment chart.)
- (3) Select the service mode 3 (AF adjustment mode).

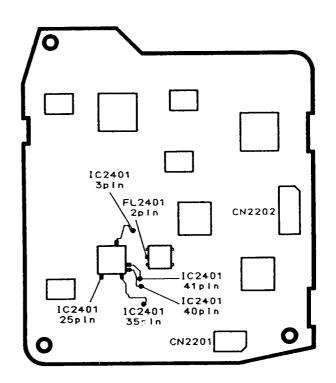


#### Procedures:

	Procedures	Data value on completion of each automatic adjustment	
1	Press the REC key on the remote controller.	"CO"	•
2	Press the AF ON/OFF key.  (Automatic zooming is performed to the telephoto end.)	"CO" or "40"	* "40" is indicated if the image is focused in the telephoto end setting at
3	Readjust the angle of view, and press the AF ON/OFF key.	"CO"	the start of adjustment.
4	Check whether the Siemens chart is in focus.  If it is in focus, press the AF ON/OFF key.  If the Siemens chart is out of focus, bring it into focus using the MANUAL FOCUS F/N key and then press the AF ON/OFF key.	"CO"	
-	Press the AF ON/OFF key.  Check whether the Siemens chart is in focus.  If it is in focus, press the AF ON/OFF key.  If the Siemens chart is out of focus, bring it into focus using the ZUUM T/W key and then press the AF ON/OFF key.	"AO" "CO"	If "80" is indicated, go back to step 5.
7 8	Same as in step 4. Press the AF ON/OFF key.	"CO" "88" or "80"	
	Press the AF ON/OFF key.	"98"	
10	Take the same procedure as in step 6, and wait for 10 sec (approx.). Then, check that the image is not defocused in zooming operation. If defocused, turn try adjustment again.		

CAMERA-MAIN P.C.B.





## 7. Electrical Adjustments of Recorder Section

\* Note: Adjustments from 7-1 through 7-5 and 7-21 must be performed with the C-MAIN P.C.B. connected.

# 7-1 Switching frequency (power supply) adjustment

MODE	REC PAUSE		
M. EQ.	Frequency counter		
	Note: Connect the frequency counter		
	through the oscilloscope.		
TP/TRIG.	POWER SUPPLY P.C.B. Q1009 - pin 4		
ADJ.	POWER SUPPLY P.C.B. VR1002 (PWM)		
SPEC.	1.0 <u>+</u> 0.02 MHz		

\* Note: Apply a voltage of  $6.00 \pm 0.002$  V to the battery terminal.

### 7-2 +15.5 V adjustment

MODE	REC PAUSE	
M. EQ.	Digital voltmeter	
TP/TRIG.	POWER SUPPLY P.C.B. CN1002 - pin 19	
ADJ.	POWER SUPPLY P.C.B. VR1004 (+15.5V)	
SPEC.	15.0 <u>+</u> 0.2 VDC	

\* Note: Apply a voltage of 6.00 ± 0.02 V to the battery terminal.

## 7-3 VIDEO 5 V adjustment

MODE	REC PAUSE
M. EQ.	Digital voltmeter
TP/TRIG.	POWER SUPPLY P.C.B. CN1002 - pin 4
ADJ.	POWER SUPPLY P.C.B. VR1001 (5V)
SPEC.	5.0 <u>+</u> 0.1 VDC

\* Note: Apply a voltage of  $6.00 \pm 0.02$  V to the battery terminal.

# 7-4 CAMERA 5 V adjustment

MODE	REC PAUSE
M. EQ.	Digital voltmeter
TP/TRIG.	POWER SUPPLY P.C.B. CN1002 - pin 14
	POWER SUPPLY P.C.B. VR1003 (CAM5V)
SPEC.	5.0 + 0.1 VDC
_	_

## 7-5 Undercut/destination adjustment

MODE	REC PAUSE/Service mode 6	
M. EQ.	Digital voltmeter	
SPEC.	Only writing with the REC key	1
	(automatic adjustment)	1

#### Procedures:

- (1) Apply a voltage of  $5.65 \pm 0.05$  V to the battery terminal.
- (2) Load the videocassette, and set up the REC PAUSE mode.
- (3) Press the COUNTER RESET key.
- (4) Reset the REC/PAUSE mode.
- (5) When the destination (TV System) data is other than "USA CRT", correct it to "USA CRT" by the tape return key.

# 7-6 Switching point adjustment

MODE	Color bar master (DY9-1062-000)	Τ
M. EQ.	РВ	1
TP/TRIG.	VIDEO OUT	
	R-MAIN P.C.B. CN309 - pin 6	1
ADJ.	R-MAIN P.C.B. VR301 (SWP)	1
SPEC.	7.0 <u>+</u> 1 H	

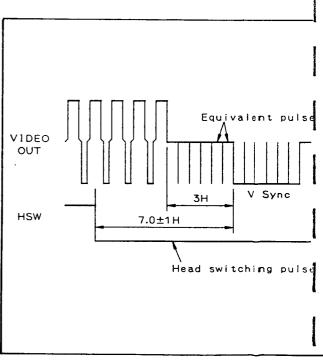


Fig. II-49

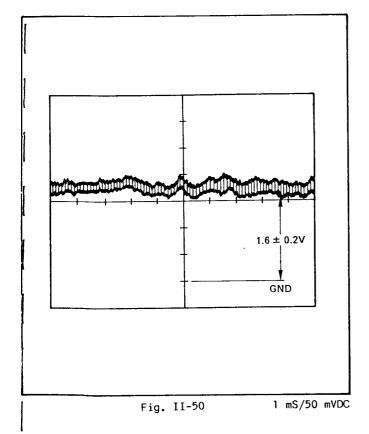
# 7 Jitter error bias adjustment

i	
MODE	PB
M. EQ.	Digital voltmeter
7/TRIC	R-MAIN P.C.B. IC4302 - 8 pin
1,51.	R-MAIN P.C.B. VR4302 (BIAS)
SPEC.	2.0 + 0.1 VDC

# 7-8 Jitter error correction (UCS1A only)

- 1		
ſ	ODE	PB
ľ	M. EQ.	Oscilloscope
ħ	P/TRIG.	R-MAIN P.C.B. IC4301 - 2 pin
H	DJ.	R-MAIN P.C.B. VR4301 (J ERR)
ľ	SPEC.	1.6 + 0.2 VDC

Note: After jitter error correction, make jitter error bias adjustment (see 7-7) to check for a jitter error bias. If any jitter error bias exists, make jitter error bias adjustment again.



# 7-9 VIDEO AGC adjustment

SIGNAL	White 100% video signal
MODE	E-E
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO OUT (75 $\Omega$ terminated)
ADJ.	R-MAIN P.C.B. VR607 (AGC)
SPEC.	1.00 <u>+</u> 0.04 Vp-p

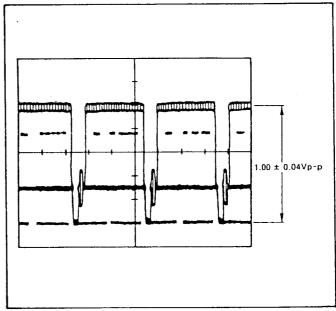


Fig. II-51

20 µsec/20 mV

# 7-10 REC Y level adjustment

SIGNAL	White 100% video signal
MODE	E-E
M. EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. IC604 - pin 3
ADJ.	R-MAIN P.C.B. VR617
SPEC.	0.50 <u>+</u> 0.02 Vp-p

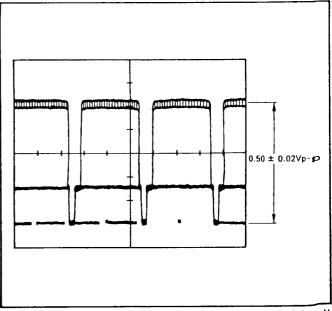


Fig. II-52

20 µsec/10 **s**mV

## 7-11 Y FM carrier (normal) adjustment

SIGNAL	No signal (Option terminal)
MODE	Normal REC
M. EQ.	Frequency counter
	Note: Connected via an oscilloscope.
TP/TRIG.	VS P.C.B. IC604 - 43 pin
ADJ.	VS P.C.B. VR608 (N CAR)
SPEC.	4.38 ± 0.02 MHz

- \* Notes: 1. Load a normal cassette tape.
  - 2. Only for the UCS1A, perform the Y FM carrier (Hi8) adjustment (7-13) after this adjustment.

## 7-12 Y FM deviation (normal) adjustment

SIGNAL	100% white video signal
MODE	Normal REC
M. EQ.	Oscilloscope
TP/TRIG.	VS P.C.B. IC604 - 43 pin
ADJ.	VS P.C.B. VR612 (N DEV)
SPEC.	0.19 µsec/1 cycle

- \* Notes: 1. Load normal tape.
  - 2. Observe the video signal at the point where it has the shortest cycle.
  - 3. Only for the UCS1A, perform the Y FM deviation (Hi8) adjustment (7-14) after this adjustment.

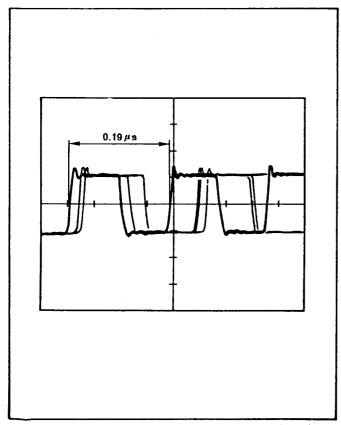


Fig. II-53

50 nS/5 mV

#### 7-13 Y FM carrier (Hi8) adjustment

SIGNAL	No signal
MODE	Hi8REC
M. EQ.	Frequency counter
	Note: Connected via an oscilloscope.
TP/TRIG.	VS P.C.B. IC604 - 43 pin
ADJ.	VS P.C.B. VR609 (H CAR)
SPEC.	5.99 ± 0.02 MHz

- \* Notes: 1. Load Hi8ME tape.
  - 2. Connect an oscilloscope.
  - 3. Before the adjustment, perform the Y FM carrier (normal) adjustment (7-11).

## 7-14 Y FM deviation (Hi8) adjustment

SIGNAL	100% white video signal
MODE	Hi8REC
M. EQ.	Oscilloscope
TP/TRIG.	VS P.C.B. IC604 - 43 pin
ADJ.	VS P.C.B. VR613 (H DEV)
SPEC.	0.3975 µsec/3 cycle

- \* Notes: 1. Load Hi8ME tape.
  - 2. Observe the video signal having thr shortest cycle.
  - 3. Before the adjustment, perform the Y FM deviation (normal) adjustment (7-12).

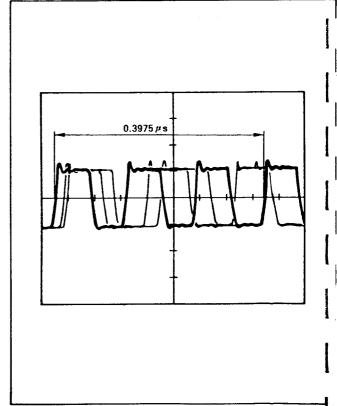


Fig. II-54

# .15 Recording current Y adjustment

SIGNAL	No signal
MODE	REC
1. EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. Q628-E
ADJ.	R-MAIN P.C.B. VR606 (Y CUR)
3PEC.	320 <u>+</u> 10 mV

# \* Note: Load Hi8ME tape.

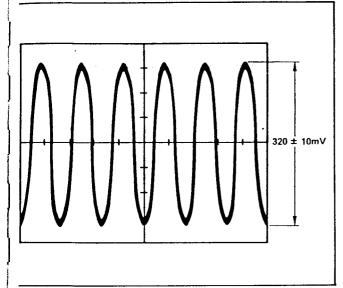


Fig. II-55

5 µsec/5 mV

# '-16 Recording current AUDIO adjustment

SIGNAL	Red raster signal
MODE	REC
M. EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. VR603 - pin 3
ADJ.	R-MAIN P.C.B. VR603 (AFM CUR)
SPEC.	140 <u>+</u> 10 mVp-p

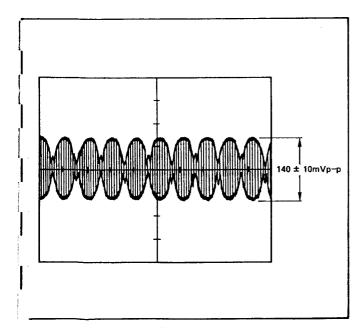


Fig. II-56

# 7-17 Recording current ATF adjustment

SIGNAL	Red raster signal
MODE	REC (LINE IN)
M. EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. VR602 - pin 3
ADJ.	R-MAIN P.C.B. VR602 (ATF)
SPEC.	210 <u>+</u> 10 mVp-p

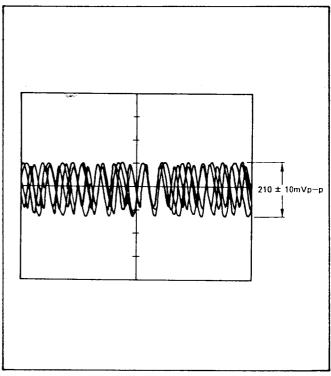


Fig. II-57

10 μsec/10 mV

# 7-18 Recording current C adjustment

SIGNAL	Red raster signal
MODE	REC (LINE IN)
M. EQ.	Oscilloscope (1:1)
TP/TRIG.	R-MAIN P.C.B. Q617 - pin 5 (CH-1)
	R-MAIN P.C.B. Q617 - pin 6 (CH-2)
	R-MAIN P.C.B. Q609 - pin 5 (CH-3)
	R-MAIN P.C.B. Q609 - pin 6 (CH-4)
	R-MAIN P.C.B. IC4102 - pin 97 (1/2 SWP)
	R-MAIN P.C.B. FL608 - pin 6
ADJ.	R-MAIN P.C.B. VR605 (CH-1)
	R-MAIN P.C.B. VR604 (CH-2)
	R-MAIN P.C.B. VR601 (CH-3)
	R-MAIN P.C.B. VR600 (CH-4)
SPEC.	100 <u>+</u> 2 mVp-p

\* Note: Before performing this adjustment, adjust the pattern generator so that the Vp-pratio between the burst signal and the color signal is 1:2.5.

# Procedures:

- (1) With the red raster signal applied in the REC mode, adjust a p-p value on each of channels Q617 - pin 5, Q617 - pin 6, Q609 pin 5, Q609 - pin 6 so that it will be 100mVp-p. (Preadjustment)
- (2) With the red raster signal applied in the REC/PB mode, conduct observation at pin 6 of FL608. Check for p-p value variation among channels.
- (3) It is OK'd if the variation ratio of the smallest p-p value to the largest p-p value is within a range of 1:1.3. If this condition is not satisfied, go back to step (1) and retry preadjustment for averaging variation.
- (4) Repeat steps (2) through (3) to eliminate variation among channels in playback.

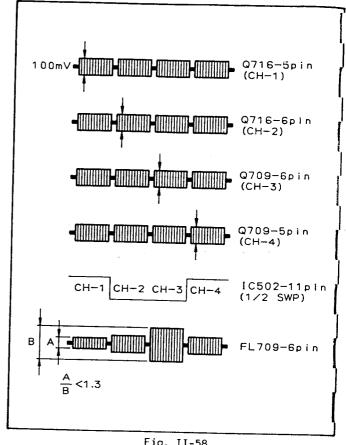
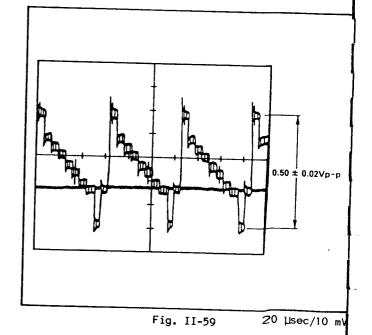


Fig. II-58

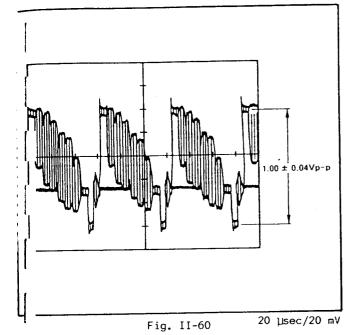
# 7-19 PB Y1 level adjustment

SIGNAL	Color bar master
MODE	PB
M. EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. IC604 - pin 15
	R-MAIN P.C.B. VR610 (PBY)
	0.50 ± 0.02 Vp-p



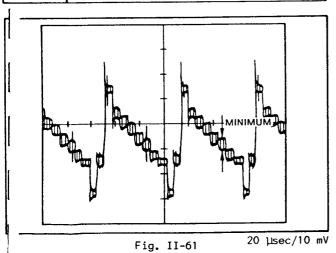
# 0 PB Y2 level adjustment

SIGNAL	Color bar signal
NODE	PB .
N EQ.	Oscilloscope
TrIG.	VIDEO OUT (75-ohm termination)
ADJ.	R-MAIN P.C.B. VR615 (PB)
EC.	1.00 + 0.04 Vp-p



# 21 Y/C separation adjustment

SIGNAL	Color bar signal
DDE	PB
EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. IC604 - 11 pin
DJ.	R-MAIN P.C.B. VR611
11	R-MAIN P.C.B. VR614
SPEC.	Chroma component minimized



# 7-22 JOG chrominance phase adjustment

SIGNAL	Color bar signal (REC/PB)
MODE	SEARCH
M. EQ.	Monitor TV
ADJ.	R-MAIN P.C.B. VR616 (JOG BURST)
SPEC.	Reduce black noise bar appearing under
	each white noise bar as possible.

# 7-23 Playback peaking adjustment

SIGNAL	V sweep master signal
MODE	РВ
M. EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. Q602-E/
	R-MAIN P.C.B. IC4102 - pin 97
ADJ.	R-MAIN P.C.B. VR504 (CH-1),
İ	VR501 (CH-2),
	VR502 (CH-3),
	VR503 (CH-4)
SPEC.	V8.5 2
	V4.5 = 3

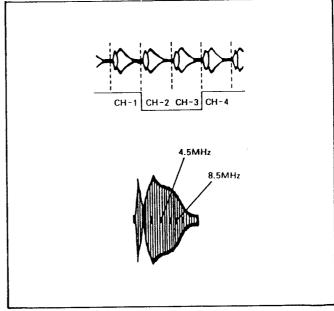


Fig. II-62

#### 7-24 Generated character position adjustment

SIGNAL	Color bar singal
MODE	E-E (Service mode 4)
M. EQ.	Monitor TV
ADJ.	R-MAIN P.C.B. VC4101 (CG)
SPEC.	The rightmost character of counter should be positioned at the boundary of red and blue.

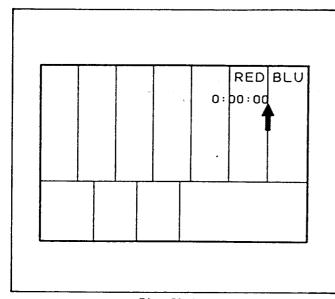


Fig. II-63

### 7-25 fo (AUDIO) adjustment

SIGNAL	Standard tape (STEREO)							
	DY9-1291-000							
MODE	PB							
M. EQ.	Oscilloscope							
TP/TRIG.	AUDIO P.C.B. IC101 - pin 6,							
	pin 44 (Lch)							
	AUDIO P.C.B. IC102 - pin 6,							
	pin 44 (Rch)							
ADJ.	AUDIO P.C.B. VR101 (Lch)							
	AUDIO P.C.B. VR102 (Rch)							
SPEC.	0V							

#### Procedures:

- (1) Play back a standard tape (stereo).
- (2) Monitor the play back sound and observe the potential difference between AUDIO P.C.B. IC101 - pin 6 and pin 44.
- (3) Adjust VR101 in such a way that the play back sound is normal (there is no howling sound, etc.) and that there is no potential difference.
- (4) Observe AUDIO P.C.B. VR102 pin 6 and pin 44 in the same manner as in 2 and 3, and then adjust them with VR102.

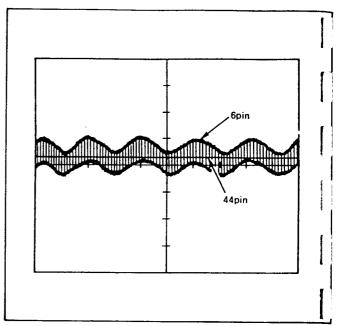


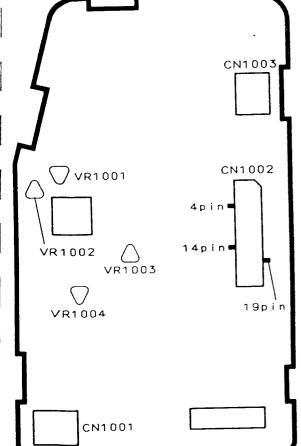
Fig. II-64

#### 7-26 Deviation (AUDIO) adjustment

SIGNAL	Standard tape (STEREO)					
	DY9-1291-000					
MODE	PB					
M. EQ.	AC voltmeter					
TP/TRIG.	Stereo line terminal					
ADJ.	R-MAIN P.C.B. VR103 (L DEV),					
	VR104 (R DEV)					
SPEC.	-10 <u>+</u> 0.5 dB					

- \* Notes: 1. Be sure to do this by always inserting a pin into the Rch terminal.
  - 2. Before the adjustment, perform the fo (AUDIO) adjustment (7-24).

POWER SUPPLY P.C.B.



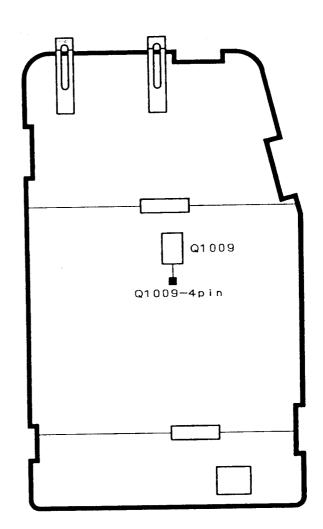


Fig. II-65

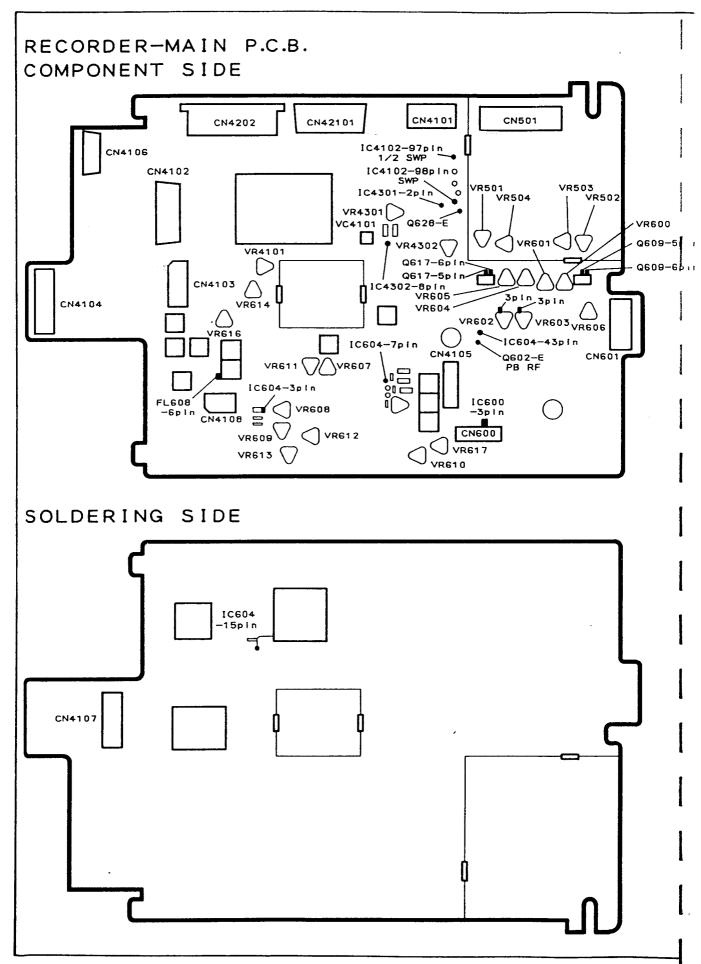


Fig. II-66

AUDIO P.C.B. SOLDERING SIDE COMPONENT SIDE IC101 -44pin IC101-6pin VR103 VR101 CN101 O\_44pin CN102 IC102-6pin VR104 VR102 CN241

Fig. II-67

#### 8. Adjustments of Electronic Viewfinder

#### 8-1 Free-run frequency adjustment

SIGNAL	No signal (terminal opened)
MODE	Service mode 4 (LINE IN)
M. EQ.	Oscilloscope, frequency counter
TP/TRIG.	EVT P.C.B. TP2916 (ID)
ADJ.	EVF P.C.B. VR2902 (H.PHASE)
SPEC.	16.2 ± 0.2 KHz

#### 8-2 Vertical amplitude adjustment '

SIGNAL	Round subject
MODE	E-E
M. EQ.	EVF, monitor TV
ADJ.	EVF P.C.B. VP2901 (V-SIZE)
SPEC.	Compare with monitor TV picture.
	Imaging should be consistent.

#### Procedures:

- (1) Shoot a round subject (for examining vertical distortion) and adjust the angle of view over the entire screen.
- (2) Compare the EVF picture with the monitor TV picture. Adjust VR2901 so that these pictures will be consistent.

#### 8-3 Rotation and centering adjustment

MODE	E-E
M. EQ.	EVF
ADJ.	Deflection yoke, centering magnet
SPEC.	Picture aligned at center without
	tilting.

#### Procedures:

- (1) Shoot a subject that allows check of tilting/centering of picture.
- (2) Loosen the fastening ring so that the deflection yoke can be rotated.
- (3) Rotate the deflection yoke to correct tilting of picture.
- \* Note: Tighten the centering magnet to such an extent that it will be just movable.
- (4) Adjust the centering magnet so that the picture will be centered.
- (5) Tighten the fastening ring securely.
- \* Note: Take care not to overtighten the fastening ring.
- (6) Fix the centering magnet by applying threadlock paint or the like (at two points with 180° interval).

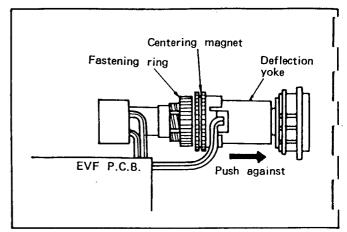


Fig. II-68

#### 8-4 Brightness adjustment

SIGNAL	Self re∞rding/playback tape	
	(gray scale)	
MODE	PLAY	
M. EQ.	EVF	
ADJ.	EVF P.C.B. VR2904 (BRIGHT)	
SPEC.	Up to 11 levels of gray scale	
	distinguishable.	

#### 8-5 Focus adjustment

MODE	Lens capped (character display)						
M. EQ.	EVF						
ADJ.	EVF P.C.B. VR2903 (FOCUS)						
SPEC.	EVF character in the best focus.	1					

#### 8-6 Locations of TPs and VRs

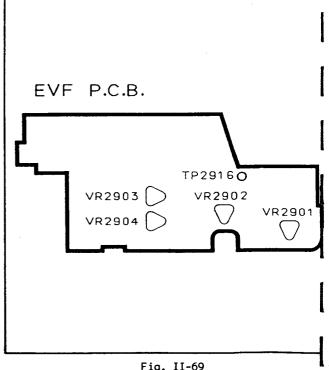


Fig. II-69

# 9. Adjustment of Recorder Mechanism

For adjusting the recorder mechanism, remove the lens unit as shown below. The tracking shift function is available in service mode 5. For details of the adjustment procedure, refer to the UC Mechanical Chassis Service Manual (DY8-3391-504-201).

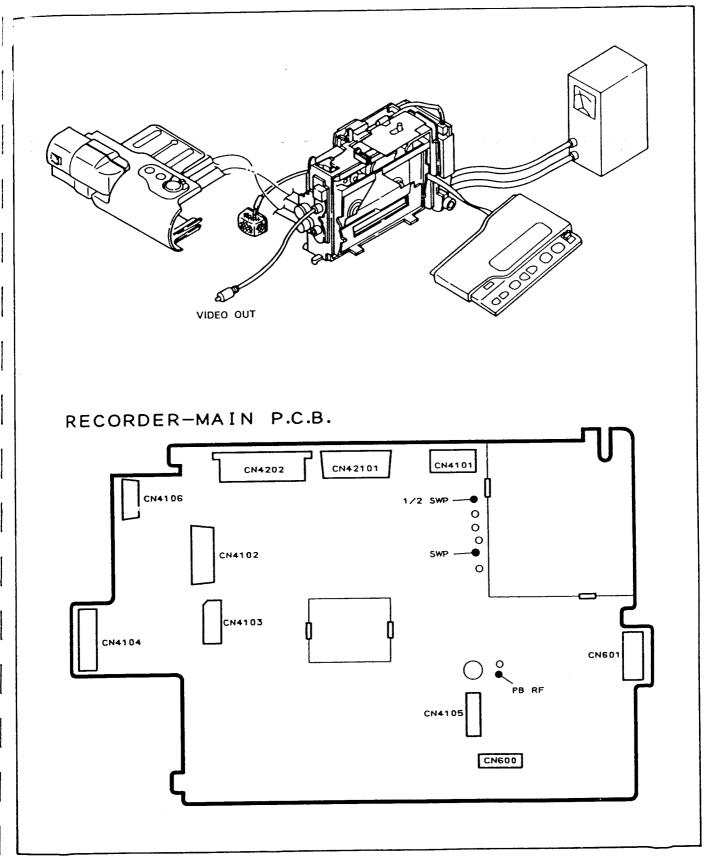


Fig. II-70

# 10. Checking and Adjusting Items after Replacing Main Parts

After replacing any main part, carry out adjustment referring to the table shown below. This table is presented for the purpose of reference indicating minimum necessary adjustment items to be taken after replacing any main part. Note that this table is not always applicable after replacement of multiple parts or in case of some trouble symptoms.

Table II-4 (1/2)

o: Adjust

△: Check

	Replaced parts	LENS ASS'Y	CCD	_	R-MAIN P.C.B.	POWER SUPPLY P.C.B.	CAMERA MI-COM.	MAIN MI-COM.	UPPER DRUM	Ε
No. \	Adjustment	┪			L	1.0.0.				1
5-1	Clock frequency	<del> </del>	<b> </b>	Δ				<del> </del>		H
5-2	PLL	<del>- </del>	<del></del> -	Δ	·	<b>-</b>	0		<del>                                     </del>	H
5-3	CCD reset		0	0		<del> </del>				+
5-4	CCD sub-voltage		0	0		ļ	0			H
5-5	iris encoder	<u> </u>	ļ				0		<del> </del>	╁┪
5-6	Setup level .		0	0			0	ļ	ļ	+
5-7	Black level take-in		0	0			0	<u> </u>	<b> </b>	╁
5-8	Burst level			0			0		ļ <u> </u>	$oldsymbol{oldsymbol{\sqcup}}$
5-9	White clip		0	0			0	ļ		1
5-10	Iris		0	0			0		ļ	$\perp$
5-11	AGC		0	0			0	ļ		$\coprod$
5-12	Aperture		0	0		<u> </u>	0		ļ	Ц
5-13	Y level		0	0	ļ		0		ļ	$\perp$
5-14	Color difference simultaneity	l	0	0			0	ļ		$\downarrow_{\mathbf{I}}$
5-15	Preset white		0	0			0			Ц
5-16	Color balance		0	0			0			Ľ
5-17	White balance 5200		0	0			0		<u> </u>	<b>↓</b>
5-18	White balance 3200		0	0			0			Ц
5-19	White level take-in 3200		0	0			0			l
5-20	White level take-in 5600		0	0			0			
6-1	Offset			0						Ц
6-2	AF BPF			0			0		<u> </u>	Ц
6-3	AF ES take-in			0			0			L
6-4	CZ	0		0			0			

o: Adjust ∆: Check

No.	Replaced parts Adjustment	LENS ASS'Y		C-MAIN P.C.B.	R-MAIN P.C.B.	P.C.B.	CAMERA MI-COM.	MAIN MI-COM.	UPPER DRUM	EVF
7-1	Switching frequency (power supply)					Δ				L
7-2	+15.5V					Δ				ļ
7-3	VIDEO 5V					Δ			ļ	ļ
7-4	CAMERA 5V					Δ				ļ
7-5	Undercut (setting for destination)			0			0			<u> </u>
7-6	Switching point				Δ					<del> </del>
7-7	Jitter error bias				Δ	ļ			<del> </del>	├
7-8	Jitter error				Δ_	ļ			ļ	┼
7-9	VIDEO AGC	=	ļ		Δ_	ļ		-	<del> </del>	<del>                                     </del>
7-10	REC Y level		<u> </u>		Δ_	<u> </u>			<del> </del>	<del> </del>
7-11	Y FM carrier		1		Δ_	-				┼—
7-12	Y FM deviation .		<u> </u>	-	Δ_	ļ <u>.</u>	<del></del>		<del> </del>	<del> </del>
7-13	Y FM carrier (Hi8)		ļ		Δ	ļ		<del> </del>	<del> </del>	┼
7-14	Y FM deviation (Hi8)		↓	<b>-</b>	Δ				<del>                                     </del>	
7-15	Recording current Y		ļ	ļ <u>-</u>	Δ	<b></b>	ļ		0	┼
7-16	Recording current AUDIO				Δ	ļ	ļ		0	┼
7-17	Recording current ATF			ļ	Δ		<u> </u>	ļ	0	+
7-18	Recording current C		ļ	ļ	Δ				0	
7-19	PB Y1 level				Δ	ļ			0	<del> </del>
7-20	PB Y2 level		-		$\perp \Delta$		ļ. — —	ļ	0	+
7-21	Y/C separation		1		Δ	<del> </del>		ļ	<del> </del>	<del> </del>
7-22	JOG chrominance phase		┷		Δ_	<del>                                      </del>	-		+	+-
7-23	Playback peaking		<u> </u>		Δ	ļ. —	<del> </del>		- 0	+-
7-24	Generated character position		4		Δ					┼
7-25	fo (AUDIO)		+	-	$\frac{1}{\Lambda}$	<del> </del>	+	+	+	+
7-26	Deviation (AUDIO)		-	-	$\perp$ _ $\Delta$ _		<u> </u>	-	+	$\perp_{\Delta}$
8-1	Free-run frequency			-			-		+	+ <del>\</del> \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
8-2	Vertical amplitude		<b>-</b>		-				+	\\ \frac{1}{\triangle}
8-3	Rotation and centering			-	-			+		$+\frac{2}{\Delta}$
8-4	Brightness		_	-	<del> </del>		<del> </del>		<del>- </del>	1 2
8-5	Focus									

### **CONTENTS**

EXPLODED VIEWS	
Casing Parts Section	<b>Ⅲ</b> – 1
Camera - Recorder Units Section	<b>Ⅲ</b> − 3
Lens / EVF Units Section	III — <b>5</b>
Mechanical Chassis Section 1	
Mechanical Chassis Section 2 ······	-
Mechanical Chassis Section 3 ······	
Accessory Parts Section	III −13
ELECTRICAL PARTS LIST	III — 15
PARTS LIST	III <b>–</b> 21

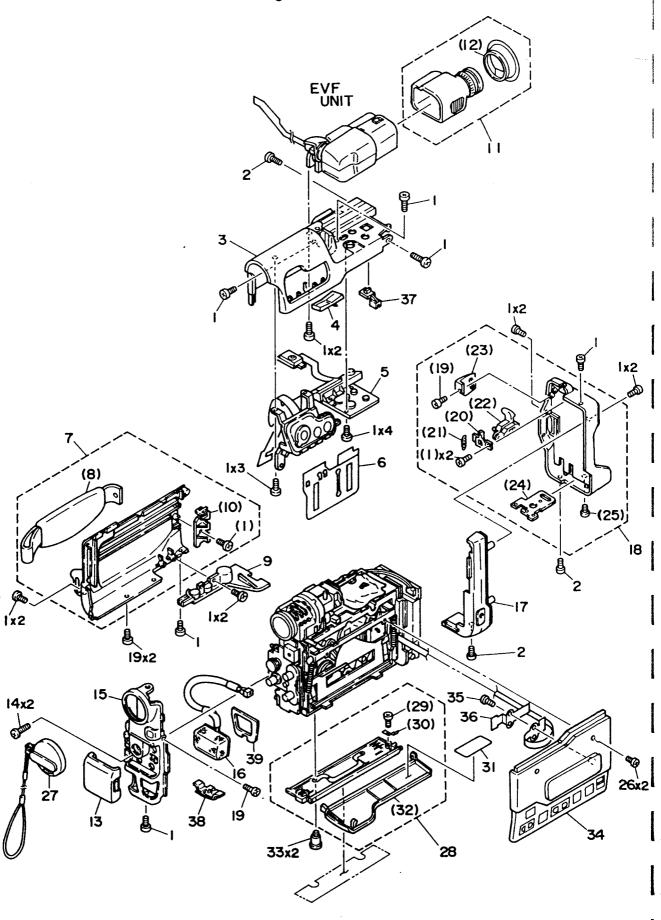
# CAUTION

- 1. ESPECIALLY CRITICAL PARTS IN THE POWER CIRCUIT BLOCK SHOULD NOT BE REPLACED WITH OTHER MARKS.

  CRITICAL PARTS ARE MARKED WITH A IN THIS ELECTRICAL PARTS LIST.
- 2. THE NUMBERS INDICATED ON THE CONNECTORS DO NOT CORRESPOND TO THE SYMBOL NUMBERS.

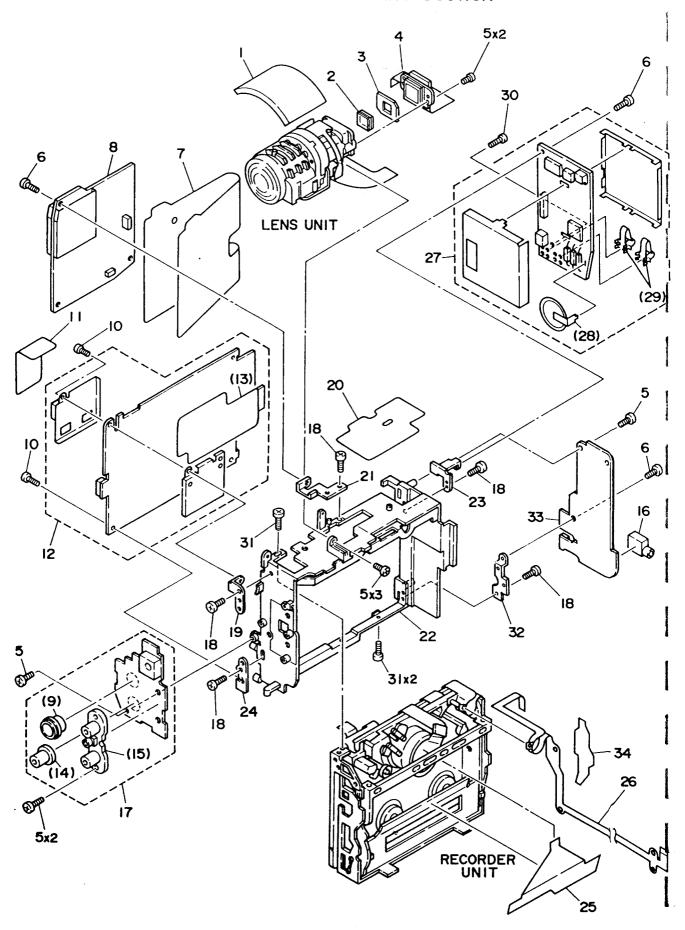
  PLEASE CHECK THE CORRECT SYMBOL NUMBERS OF THE CONNECTORS ON THE INTERCONNECTION SCHEMATIC DIAGRAM.

# Casing Parts Section



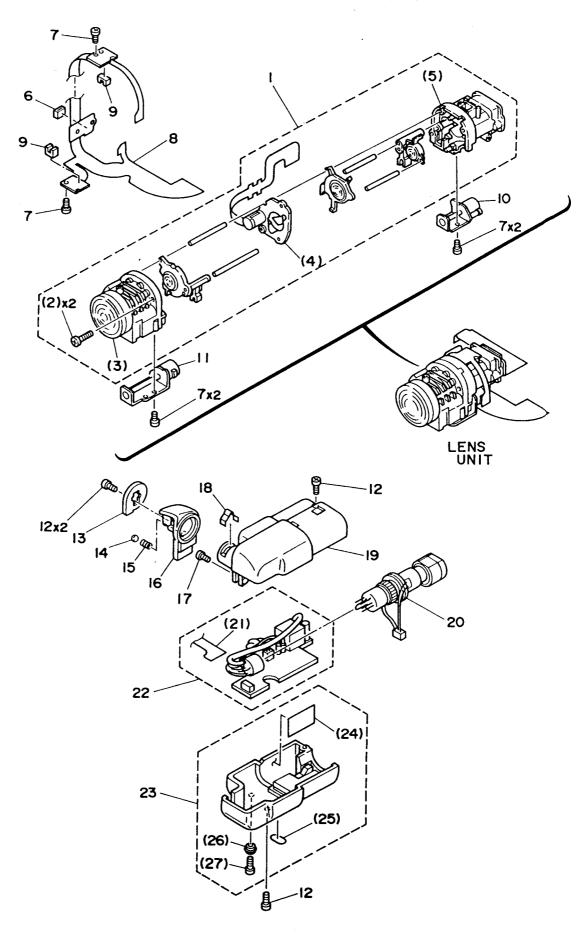
SYMBOL	PART NO.	CLAS	S QTY	DESCRIPTION	REMARKS
1	XA4-9170-409	000 F	26	SCREW	
2	XA1-7170-309		3		
3	DY1-7381-000		1		
4	DY1-7361-000	111	_	· .	
5	DG1-3105-000			·	
J	202 2233 333		_	1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
6	DA1-5927-000	000 C	1	COVER, DRUM (1)	
7	DY1-7384-000	000 E	1	COVER, LEFT	
8	DA1-5742-000	000 E	1	STRAP, HAND	
9	DY1-7389-000	000 E	1	SOCKET, TRIPOD	
10	DA1-5702-000	000 C	1		
				•	
11	DG1-2174-000	000 E	1	FINDER ASS'Y	
12	DA1-5746-000	000 E	1	EVE CAP	
13	DA1-5907-000	000 E	1	COVER, AV	
14	XA4-9170-609	000 F	2	SCREW	
15	DG1-3100-000	000 E	1	COVER, FRONT	
16	DH9-0627-000	000. E	1	MICROPHONE ASS'Y	
17	DA1-5905-000	000 E	1	COVER, REAR (2)	
18	DG1-2172-000	000 E	1	COVER, REAR	
19	XA4-9170-509	000 F	4	SCREW	
20	DA1-5737-000	000 C	1	HOLDER, BATTERY EJECT KNOB	
21	DS1-5243-000				
22	DA1-5736-000	000 C	1		
23	DA1-5740-000	000 C		• • • • • • • • • • • • • • • • • • • •	
24	DA1-5739-000	000 C			
25	XA1-7170-209	000 F	1	SCREW	
26	XA9-0645-000				
27	DG1-2177-000			·	
28	DG1-2176-000			•	
29	XA4-9170-359	000 F	' 1	SCREW	
30	DA1-5756-000	000 E	1	SPRING, PLATE	
			_		
31	DA1-5779-000			•	
32	DA1-5705-000			·	
33	DA1-4009-000				
34	DG1-3111-000			•	
35	XA4-9170-229	000 F	1	SCREW	
2.5			_		
36	DA1-5706-000			• • • • • • • • • • • • • • • • • • • •	
. 37	DA1-5923-000			·	,
38	DA1-5935-000			•	
39	DA1-5912-000	000 C	1	SHEET, RUBBER	

# Camera · Recorder Units Section



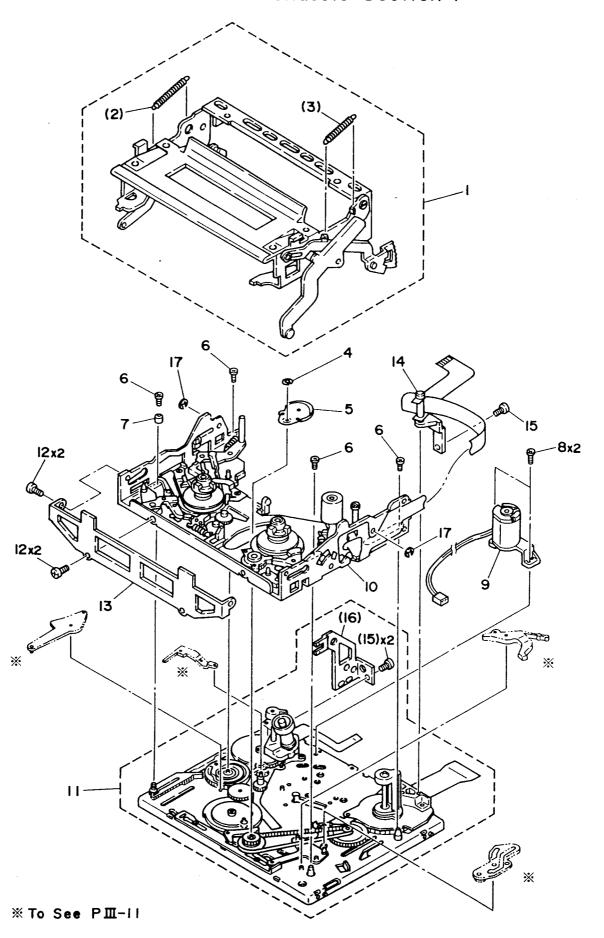
SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DA1-5934-000	000 C	1	CUSHION, LENS	
2	DH9-0603-000	000 C	1	CRYSTAL FILTER	
3	231-5728-000	000 - C	1	SPACER	
4	DY1-7386-000	000 B	1		
5	DA1-5728-000 DY1-7386-000 XA4-9170-409	000 · F	9	SCREW	
3					
6	XA1-7170-307	000 F	3 1 1	SCREW	
7	DA1-5717-000	000 C	1	LIGHT SHIELD	
8	DG1-3095-000	000 C	1	P.C.B. ASS'Y, CAMERA MAIN	
9	WS6-5007-000		1	TERMINAL, S	
	XA9-0568-000		2	SCREW	
11	DA1-5720-000		1	LIGHT SHIELD	
12	DG1-3096-000	000 C		P.C.B. ASS'Y, RECORDER MAIN	
13	DA1-5445-000	000 C 000 C	1		
14	DH9-0574-000	000 C	1		
15	DH9-0607-001	000 C	1	JACK, AV	
16	WS6-5001-000 DG1-3091-000	000 C	1		
17	DG1-3091-000	000 C	1		
18	XA9-0549-000	000 F	5		
19	DA1-5920-000	000 C	1		
20	DA1-5764-000	000 C	1	LIGHT SHELD	
			-	WOLDED O MALK D C D ACCIV	
21	DA1-5758-000		1	HOLDER, C-MAIN P.C.B. ASS'Y	
22	DG1-3107-000				
23	DA1-5924-000		1	HOLDER	
24	DA1-5921-000				
25	DA1-5712-000	000 C	1	COVER, DRUM (2)	
	3.500 000		,	FPC	
26	DH2-1532-000	000 C	1		
27	DG1-2130-000				
28	DH9-0554-000				
29	DA1-5726-000			TERMINAL, BATTERY	
30	XA9-0649-000	000 F	1	SCREW	
2.1	XA9-0609-000	000 F	3	SCREW	
31	VW2-0003-000	000 C	ĩ		
3.4 ···	DA1-5922-000	000 C	î	HOLDER, AUDIO P.C.B. ASS'Y P.C.B. ASS'Y, AUDIO	
33	DG1-3094-000		1		
34	DA1-6065-000	000 C	1	DIGHT SHIPHD	

# Lens/EVF Units Section



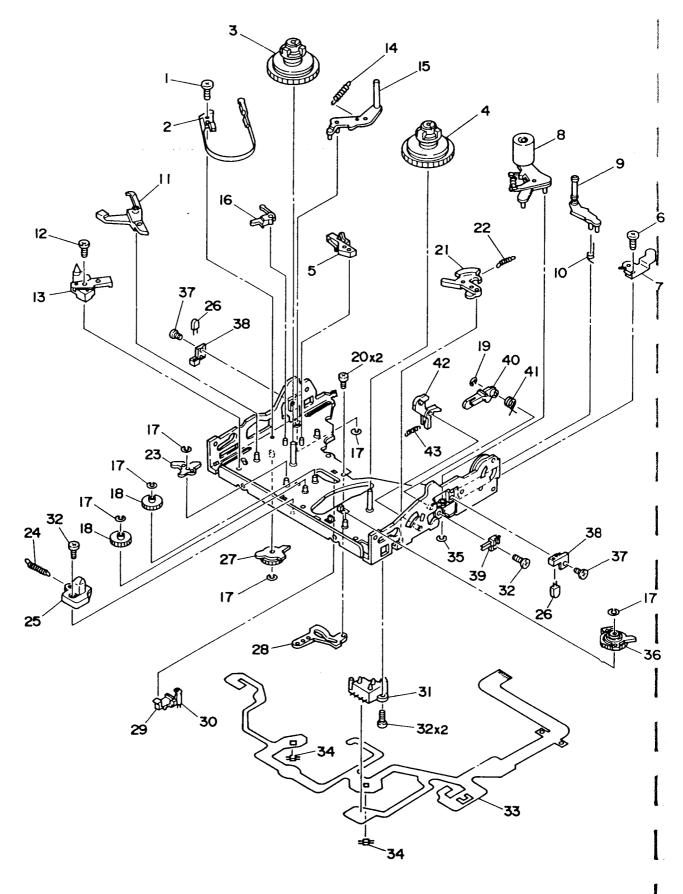
:	SYMBOL	PART NO.	c	LASS	QTY	DESCRIPTION	REMARKS
	1	DY1-7356-000	000	С	1	ZOOM LENS ASS'Y	
	2	XA4-9170-807	000	F		SCREW	
		YG9-5288-000			1	LENS, FRONT	
	4	YH8-0038-000			1	IG METER	
	5	YA1-0886-000			1	HOLDER, RELAY LENS	
	6	vs1-5446-006	000	С	1	CONNECTOR 6P	
	7	XA4-4170-457	000			SCREW	
	8	YH1-0253-000			1	FPC	
	9	WG8-5043-000			2	PHOTO INTERRUPTER	
	10	YH7-0061-000			1	MOTOR, AF	
	11	YH7-0060-000	000	С	1		
	12	XA4-6170-459	000	F	4	SCREW	
	13	DA1-5752-000				PLATE, E.V.F.	
	14			С		BALL, STEEL	
	15	DS1-5255-000	000	С	1	SPRING, COIL	
	16	DA1-5754-000	000	В	1	HOLDER, E.V.F.	
	17	XA4-6170-659	000	F	1	SCREW	
	18	DA1-5753-000	000	С	1	SPRING, PLATE	
	19	DY1-7354-000			1		
$\Delta$	20	DG1-1752-000	000	С	1	CRT ASS'Y	
	21	DH2-1533-000			1		
	22	DG1-2163-000			1		
	23	DY1-7357-000	000	В	1		
	24	DA1-5714-000	000	С	1	SHEET	
	25	DA1-5713-000			1	SEAL, E.V.F.	
	26	DA1-5775-000				· · · · · · · · · · · · · · · · · · ·	
	27	XA4-6170-559	000	F	1	SCREW	

# Mechanical Chassis Section I



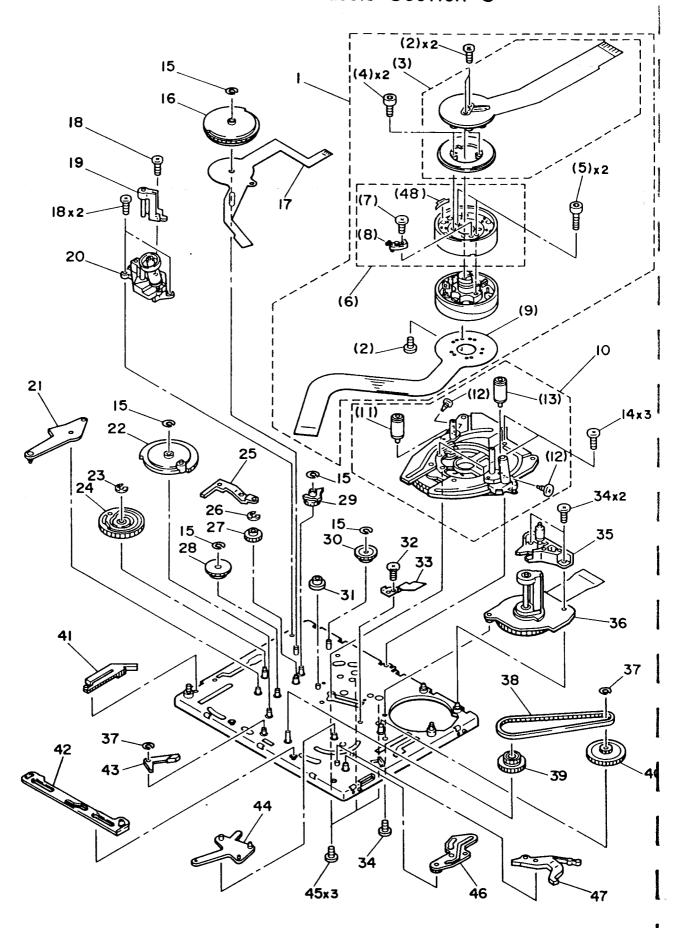
SYMBOL	PART NO.	,	CLASS	QTY	DESCRIPTION	REMARKS
. 1	DG1-1945-000	000	С	1	CASSETTE COMPARTMENT ASS'Y	
2	DS1-5250-000	000	С	1	SPRING, COIL	
3	DS1-5251-000	000	С	1	SPRING, COIL	
4	DA1-3312-000	000	F	1	WASHER	
5	DG1-0984-000	000	С	1	IDLER ASS'Y	
6	DA1-5302-000	000	F	1	SCREW	
7	DA1-6163-000	000	С	1	ROLLER	
8	XA1-7140-357	000	F	2	SCREW	
9	DG1-0996-010	000	С	1	MODE MOTOR ASS'Y	
10	DY1-7212-000	000	С	1	SLIDE CHASSIS ASS'Y	
11	DY1-7213-000	000	С	1	MAIN CHASSIS ASS'Y	
12	XA1-7140-229	000	F	4	SCREW	
13	DA1-5293-000	000	С	1	FRAME	
14	DA1-5292-000	000	С	1	GUIDE, PRINTED CORD	
15	XA1-7140-257	000	. F	3	SCREW	
16	DA1-5298-000	000		1	PLATE, CATCHING	
17	XD2-1100-132			2	WASHER	

# Mechanical Chassis Section 2



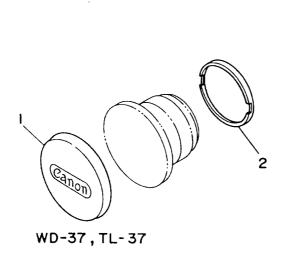
SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DA1-3323-000	000 F	1	SCREW	
2	DG1-1949-000	000 C	1	TENSION BAND ASS'Y	
3	DG1-2074-000		1	REEL, SUPPLY	e .
4	DG1-2075-000	000 C	1	REEL, TAKE UP	
5	DF1-0646-000	000 C	1	LEVER, STOP	
6	XA1-7140-147	000 F	1	SCREW	
7	DA1-5288-000	000 C	1	STOPPER, Pl2 ARM	
8	DG1-0989-000	000 C	1	PINCH ROLLER ASS'Y	
9	DG1-0990-000	000 C	1	ARM, Pl2	
10	DS1-6070-000	000 C	1	SPRING, COIL	
- 11	DA1-5289-000	000 C	1	DRIVE LEVER, RL	
12	XA1-7140-357	000 F	1	SCREW	
13	DA1-5290-000	000 C	1	PIN	
14	DS1-5254-000	000 C	1	SPRING, COIL	
15	DG1-0992-000	000 C	1	TENSION ARM ASS'Y	
16	DA1-3163-000	000 C	1	LOCK LEVER, SUPPLY REEL	
17	DA1-3312-000	000 F	6	WASHER	
18	DA1-3156-000		2	GEAR	
19	XD2-1100-132		1	WASHER	
20	DA1-3106-000	000 F	2	SCREW	
21	DA1-5287-000		1	LEVER, TB	
22	DS1-5216-000		1	SPRING, COIL	
23	DA1-3166-000		1	BRAKE, LOADING	
24	DS1-5252-000		1	SPRING, COIL	
25	DA1-5286-000	000 C	1	RELEASE, RL	
26	DH9-0508-000	000 B	2	PHOTO TRANSISTOR PT4850F	
27	DG1-0985-000		1	LIMITTER, SLB	
28	DA1-3192-000		1	PLATE, SLIDE	
29	DA1-3170-000		1	HOLDER, LED	
30	DH9-0470-000	000 B	1	LED GL452	
31	DH9-0468-000		1	SWITCH, PUSH	
··· 32	XA1-7140-307		4	SCREW	
33	DH2-1602-000		1	PRINTED CORD, S CHASSIS	
34	DH9-0469-000		2	PHOTO REFLECTOR	
35	DA1-3313-000	000 F	1	WASHER	
36	DG1-0986-000		1	BRAKE, TAKE UP REEL	
37	XA1-7140-229		2	SCREW	
38	DA1-5285-000		2	HOLDER, SENSOR	
39	DH9-0509-000		1	SWITCH	
40	DA1-5296-000	000 C	1	LEVER, DOWN	
41	DS1-6081-000	000 C	1	SPRING, COIL	
42	DA1-5284-050		1	LEVER, LOCK	
43	DS1-5253-000	000 C	1	SPRING, COIL	

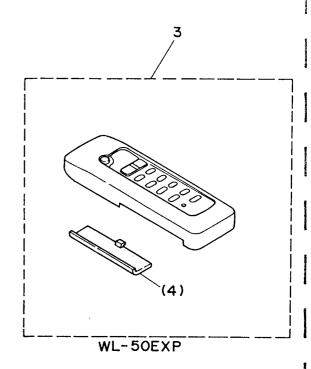
# Mechanical Chassis Section 3



SYMBOL	PART NO.	CL	ASS (	ΥTΥ	DESCRIPTION	REMARKS
1	DG1-2280-000	000	E	1	DRUM ASS'Y	
2	XA1-1140-147	000	F	4	SCREW	
3	DY2-1409-000	000	С	1	MOTOR, DRUM	
4	DA1-3316-000	000	F	2	SCREW	
5	DA1-3317-000	000	F	2	SCREW	
6	DY1-7309-000	000	E	1	UPPER DRUM ASS'Y	
7	DA1-3315-000	000	F	1	SCREW	
8	DF1-0607-000	000	С	1	EARTH ASS'Y	
9	DH2-1220-000	000	С	1	PRINTED CORD, DRUM	
10	DG1-0979-000	000	С	1	LOADING ASS'Y	
11	DF1-0629-000	000	С	1	POST 5 ASS'Y	
12	DA1-3265-000	000	F	2	SCREW	
13	DF1-0630-000	000	С	1	POST 9 ASS'Y	
14	XA1-1140-307	000	F	3	SCREW	
15	DA1-3313-000	000	F	5	WASHER	
16	DF1-0621-000	000	С	1	GEAR, MS	
17	DH2-1601-000	000	С	1	PRINTED CORD, M CHASSIS	
18	XA1-7140-357	000	F	3	SCREW	
19	DF1-0633-000	000	С	1	BASE ASS'Y, POST 2	
20	DG1-2331-010	000	С	1	P4 BASE ASS'Y	
21	DA1-3195-000	000	С	1	LEVER, MODE (1)	
22	DF1-0622-000		C	1	GEAR, SLIDE	
23	XD2-1100-172	000	F	1	E RING	
24	DA1-3152-000	000	С	1	GEAR, CAM	
25	DA1-3168-000	000	С	1	LEVER, SUPPLY MODE	
26	XD2-1100-102	000	F	1	E RING	
27	DA1-3151-000		С	1	GEAR	
28	DA1-3154-000		С	1	GEAR, SL	
29	DA1-3153-000	000	С	1	GEAR	
30	DA1-3155-000	000	С	1	GEAR	
31	DA1-6162-000	000	С	1	ROLLER	
- 32	XA1-7140-147	000	F	1	SCREW	
33	DA1-3266-000	000	С	1	PLATE, GUIDE	
34	XA1-7140-257	000	F	3	SCREW	
35	DY2-1400-000	000	С	1	POST 10 ASS'Y	
36	DG1-0997-000	000	С	1	CAPSTAN MOTOR	
37	DA1-3312-000	000	F	2	WASHER	
38	DA1-3148-000	000	С	1	BELT, CAPSTAN	
39	DF1-0626-000		C	1	GEAR, DRIVE	
40	DF1-0625-050	000	С	1	GEAR, CAPSTAN	
41	DA1-3161-000		С	1	RACK, SL	
42	DA1-3190-000		C	1	LEVER, MODE (2)	
43	DA1-3167-000		С	1	LEVER, NEUTRAL	
44	DA1-3196-000		C	1	LEVER, T MODE	
45	XA1-1140-259	000	F	3	SCREW	
46	DF1-1172-000		С	1	LEVER, PINCH	
47	DA1-3165-000		C	1	LEVER, EJECT	
48	DA1-3065-000	000	С	1	TAB, RETAINER	

# Accessory Parts Section





SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1 2 3 4	DY3-4201-000 DY3-4209-000 DY3-4210-000 DY1-7353-000 DY4-2984-000	000 B 000 B 000 B	1 1 1 1	CAP, LENS CAP, DUST (WD-37) CAP, DUST (TL-37) WIRELESS CONTROLLER WL-51EXP COVER, BATTERY	

	SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Δ	C2912	VC7-1430-562 00	0 D	1	CAPACITOR, CERA 5600pF/125V	
$\triangle$ $\triangle$ $\triangle$	C2915	VC7-1360-102 00		1	CAPACITOR, CERA 1000pF/1KV	
<b>A</b>	C2917	VC7-1380-152 00		1	CAPACITOR, CERA 1500pF/500V	
₹7	C2919 CN001	VC7-1430-562 00 VS1-5469-020 00		1 1	CAPACITOR, CERA 5600pF/125V CONNECTOR 20P	
	CNOOL	V31 3407 020 00		_	CONNECTOR 201	
	CN101	VS1-5470-018 00		1.	CONNECTOR 18P	
	CN501	VS1-5316-015 00		1	CONNECTOR 15P	
	CN600 CN601	VS1-5347-008 00 VS1-5470-020 00		1 1	CONNECTOR 8P CONNECTOR 20P	
	CN1002	VS1-5469-028 00		î	CONNECTOR 28P	
	CN2001	VS1-5256-016 00		1	CONNECTOR 16P	
	CN2201	VS1-5469-010 00		1 1	CONNECTOR 16P	
	CN2202 CN2401	VS1-5469-016 00 VS1-5256-020 00		1	CONNECTOR 16P CONNECTOR 20P	
	CN4101	VS1-5051-006 00		ī	CONNECTOR 6P	
			_	_		
	CN4102	VS1-5256-016 00		1 1	CONNECTOR 16P	
	CN4103 CN4104	VS1-5471-016 00 VS1-5470-028 00		1	CONNECTOR 16P CONNECTOR 28P	
	CN4105	VS1-5347-008 00		ī	CONNECTOR 8P	
	CN4106	VS1-5256-008 00	0 C	1	CONNECTOR 8P	
	CN4107	VS1-5469-018 00	0 C	1	CONNECTOR 19D	
	CN4107 CN4108	VS1-5471-010 00		ī	CONNECTOR 18P CONNECTOR 10P	
	CN4201	VS1-5256-020 00		ī	CONNECTOR 20P	
	CN4202	VS1-5149-015 00		1	CONNECTOR 15P	
	D001	WA1-0989-000 00	0 B	1	DIODE, ZENER MA3100	
	D002	WA1-0989-000 00	0 B	1	DIODE, ZENER MA3100	
	D003	WA1-0989-000 00		ī	DIODE, ZENER MA3100	
	D004	WA1-0989-000 00		1	DIODE, ZENER MA3100	
	D005	WA1-0989-000 00		1	DIODE, ZENER MA3100	
	D006	WA1-0989-000 00	0 B	1	DIODE, ZENER MA3100	
	D007	WA1-0989-000 00	0 B	1	DIODE, ZENER MA3100	
	D008	WA1-0989-000 00		1	DIODE, ZENER MA3100	
	D241	WA1-0989-000 00		1	DIODE, ZENER MA3100	
	D501 D502	WA1-5122-000 00 WA1-5122-000 00		1 1	DIODE DAN222 DIODE DAN222	
			_	_		
	D503	WA1-5,122-000 00		1	DIODE DAN222	
	D504	WA1-5122-000 00 WA1-5122-000 00		1 1	DIODE DAN222	
	D600 D601	WA1-5122-000 00		1	DIODE DAN222 DIODE DAN222	
	D602	WA1-5231-000 00		ī	DIODE DAP222	
	5.605	5122 000 00		_		
	D605 D931	WA1-5122-000 00 WA1-5227-000 00		1 1	DIODE DAN222 DIODE 1SS362	
	D932	WA1-5227-000 00		î	DIODE 1SS362	
	D1001	WA1-1084-000 00	0 B	1	DIODE MAllO	
	D1002	WA1-9003-000 00	0 B	1	DIODE SB05-05CP	
	D1003	WA1-1084-000 00	0 в	1	DIODE MAllO	
	D2001	WA1-1084-000 00		ī	DIODE MAllO	
	D2002	WA1-5232-000 00		1	DIODE HN2D01FU	
	D2003	WA1-5232-000 00		1	DIODE HN2D01FU	
	D2004	WA1-5249-000 00	0 В	1	DIODE 1SV223	
	D2201	WA1-1084-000 00		1	DIODE MA110	
	D2401	WA1-1084-000 00		1	DIODE MAllo	
	D2901 D2902	WA1-0989-000 00 WA1-1084-000 00		1 1	DIODE, ZENER MA3100 DIODE MA110	
	D2902 D2903	WA1-1084-000 00		1	DIODE MAILO	
	D2004	MR1 1122 000 00	0 5	1	DIODE ACOLS	
	D2904 D4101	WA1-1123-000 00 WA1-5350-000 00		1 1	DIODE AG01Z DIODE MA724	
	D4301	WA1-5231-000 00		ì	DIODE DAP222	
	D4302	WA1-5236-000 00	0 B	1	DIODE DA221	
	D4303	WA1-5231-000 00	0 B	1	DIODE DAP222	

SYMBOL	PART NO.		CLASS	QTY		DESCRIPTION		REMARKS
IC101	WA4-5435-000	000	В	1	IC	LA7454W		
IC102	WA4-5435-000		В	ī		LA7454W		
IC103	WA3-4264-000		В	ī		SC14S66F		
IC104	WA3-4264-000	000	В	1	IC	SC14S66F		
IC105	WA4-5365-000	000	В	1	IC	LA7456M		
IC106	WA3-5657-000		В	1		SC14S70F		
IC108	WA3-4264-000		В	1		SC14S66F		
IC109	WA4-5316-000		В	1		TK11447		
IC241 IC501	WA4-5525-000 DH4-0200-000		B B	1 1		LA7470V CXA1234AR		
IC502	DH4-0200-000		В	1		CXA1234AR		
IC600	WA4-5443-000		В	1		NJM2246M	-	
IC601	DH4-0510-000		В	1		MC13400FUEF TK11447		
IC602 IC604	WA4-5316-000 DH4-0514-000		B B	1 1		CXA1207AR		
			•					
IC606	DH4-0297-000		В	1		CXL1506		
IC607	DH4-0264-000		В	1		CXA1208R		
IC608	DH4-0196-000		В	1		CXA1203N		
IC609	DH4-0411-000		В	1		MM1058XF		
IC610	DH4-0297-000	000	В	1	IC	CXL1506		
IC931	DH4-0511-000	000	В	1	IC	CXD2107M		
IC1001	WA4-5424-000	000	В	1	IC	LM311DB		
IC1002	WA4-5518-000		В	1	IC	MB3785PFV		
IC1003	WA4-5480-000		В	1		LM324N		
IC1005	WA4-5402-000	000	В	1	IC	RH5RA35AA		
IC1006	WA4-5336-000	000	В	1	IC	MPC1720ML2		
IC 1007	WA4-5403-000	000	В	1	IC	RH5VA45CA		
IC 2001	WA3-6392-000	000	В	1	IC	µPD16506GR		
IC2002	WA3-6369-000		В	1		CXD1256R		
IC 2003	WA4-5044-000	000	В	1	IC	CXD1159Q		
IC2101	WA4-5350-000	000	В	1	IC	CXA1390AR		
IC 2201	WA4-5353-000	000	В	1	IC	CXL1507N		
IC2202	WA4-5354-000	000	В	1	IC	CXL5504M		
IC2203	WA4-5351-000		В	1		CXA1391R		
IC 2204	WA4-5352-000	000	В	1	IC	CXA1392R		
· IC2301	WA4-5413-000	000	В	1	IC	NJM2902V		
IC 2302	DH4-0406-000	000	В	1	IC	LD5090		
IC2303	WA3-6307-000	000	В	1	IC	MB88344		
IC2304	DH4-0389-000	000	В	1	IC	PST574C		
IC 2305	Y22-2879-000	000	В	1	IC	SC418027FU		
IC2401	DH4-0390-000	000	В	1	IC	LD5088		
IC2402	WA4-5516-000	000	В	1	IC	TB6504F		
IC2403	WA4-5337-000		В	1	IC	LB1837M		
IC 2901	WA4-5428-000		В	1		BA7149F		
IC4101	WA4-1145-000	000	В	1	IC	RH5VA45AA		
IC4102	DH4-0549-002	000	В	1	IC	CXP80624-117Q		
IC4103	DH4-0372-000	000	В	1	IC	µPD6451AGT-810		
IC4104	WA4-5129-000	000	В	1	IC	S-87050AF		
IC <b>4</b> 105	DH4-0525-000	000	В	1	IC	SC405631FB		
IC <b>41</b> 06	WA3-6112-000	000	В	1	IC	RTC-4553A		
IC4201	DH4-0189-000	000	В	1	IC	CXA1127M		
IC4202	WA4-5566-000		В	1		CXA1512N		
IC4203	DH4-0318-000		В	1		CXAll27AM		
IC4251	DH4-0564-000		В	1		CXA1481AR		
IC4301	WA3-6436-000	000	В	1	IC	NJU4066BV		
IC4302	WA4-1248-000		В	1		μPC324G2		
IC4303	WA4-0907-000		В	1		BA6303F		
IC4304	WA4-6006-000		В	1		MC14013BF		
L2902	DH9-0615-000		D	1		L, LINEARITY		
LED001	DH9-0625-000	000	С	1	LEI	SLH-34VT144F		

SYMBOL	PART NO.	CL#	ASS Q	TY	DESCRIPT	rion	REMARKS
01.01	*** 1.227_000	000	D	1	TRANSISTOR	2504081	
Q101	WA2-1337-000 WA2-1337-000		B B	1	TRANSISTOR		
Q102	WA2-1337-000		В	1	TRANSISTOR		
Q201 Q202	WA2-1337-000		В	ĺ	TRANSISTOR		
Q202 Q203	WA2-1130-000		В	ī	TRANSISTOR		
Q203	MAZ 1233 000	000	-	•	1111110101011		
Q204	WA2-1337-000	000	В	1	TRANSISTOR	2SC4081	
0501	WA2-5139-000		В	1	TRANSISTOR	DTC144EE	
Q502	WA2-5139-000	000	В	1	TRANSISTOR	DTC144EE	
Q503	WA2-5346-000		В	1	TRANSISTOR		
Q504	WA2-5307-000		В	1	TRANSISTOR	2SC4649	
Q505	WA2-5346-000		В	1	TRANSISTOR		
Q506	WA2-5142-000		В	1	TRANSISTOR		
Q507	WA2-5139-000		В	1	TRANSISTOR		
Q508	WA2-5307-000		В	1	TRANSISTOR		
Q509	WA2-5139-000	000	В	1	TRANSISTOR	DICIAGE	
0510	WA2-5139-000	000	В	1	TRANSISTOR	DTC 144FF	
Q510 Q511	WA2-5139-000		В	ì	TRANSISTOR		
Q511 Q512	WA2-5139-000		В	ì	TRANSISTOR		
Q512 Q513	WA2-5346-000		В	ī	TRANSISTOR		
Q514	WA2-5139-000		В	ī	TRANSISTOR		
QJII	Will 3233 000		_	_			
Q515	WA2-5346-000	000	В	1	TRANSISTOR	2SA1362	
Q516	WA2-5307-000		В	1	TRANSISTOR	2SC4649	
Q517	WA2-5139-000	000	В	1	TRANSISTOR	DTC144EE	
Q518	WA2-5306-000	000	В	1	TRANSISTOR		
Q519	WA2-1400-000	000	В	1	TRANSISTOR	2SA1576	
				_			
Q520	WA2-5139-000	000	В	1	TRANSISTOR		
Q521	WA2-5141-000		В	1	TRANSISTOR		
Q602	WA2-5142-000		В	1	TRANSISTOR		
Q603	WA2-5165-000 WA2-5165-000	000	B B	1 1	TRANSISTOR TRANSISTOR		
Q604	WAZ-5165-000	000	Б	1	IKANSISION	ONDZ	
0605	WA2-5165-000	000	В	1	TRANSISTOR	UMD2	
Q606	WA2-5165-000		В	1	TRANSISTOR		
Q607	WA2-5141-000		В	1	TRANSISTOR	2SA1774	
Q608	WA2-5142-000		В	1	TRANSISTOR		
Q609	WA2-5160-000	000	В	1	TRANSISTOR	UMT2	
			_		mp	2004617	
Q610	WA2-5142-000		В	1	TRANSISTOR TRANSISTOR		
Q611	WA2-0411-000 WA2-5162-000		B B	1 1	TRANSISTOR		
Q612	WA2-5142-000		В	ì	TRANSISTOR		
Q613 Q614	WA2-5301-000	000	В	î	TRANSISTOR		
Q014	WAZ 3301 000	000	_	-	11		
Q615	WA2-5139-000	000	В	1	TRANSISTOR	DTC144EE	
Q616	WA2-5315-000	000	В	1	TRANSISTOR	UMB5	
Q617	WA2-5160-000		В	1	TRANSISTOR		
Q618	WA2-5315-000		В	1	TRANSISTOR		
Q619	WA2-5142-000	000	В	1	TRANSISTOR	2SC4617	
0620	**** 5347 000	000	Б	1	TRANSISTOR	DN2427	
Q620	WA2-5347-000 WA2-5139-000		B B	1	TRANSISTOR		
Q621 Q622	WA2-5139-000		В	ì	TRANSISTOR		
Q623	WA2-5142-000		В	î	TRANSISTOR		
Q624	WA2-5161-000		В	ī	TRANSISTOR		
•							
Q625	WA2-5142-000		В	1	TRANSISTOR		
Q626	WA2-5161-000		В	1	TRANSISTOR		
Q627	WA2-5206-000		В	1	TRANSISTOR		
Q628	WA2-5141-000		В	1	TRANSISTOR		
Q629	WA2-5314-000	UUU	В	1	TRANSISTOR	UMNO	
Q630	WA2-5139-000	000	В	1	TRANSISTOR	DTC144EE	
Q631	WA2-5314-000		В	ì	TRANSISTOR		
Q633	WA2-5323-000	000	В	ī	TRANSISTOR		
Q634	WA2-5161-000	000	В	1	TRANSISTOR		
Q635	WA2-5314-000		В	1	TRANSISTOR	UMH6	

SYMBOL	PART NO.	CL	ASS	QTY	DESCRIPT	ION	R	EMARKS
0637	WA2-5314-000	000	В	1	TRANSISTOR	UMH6		
Q638	WA2-5139-000	000	В	1	TRANSISTOR			
Q639	WA2-5142-000	000	В	1	TRANSISTOR			
Q640	WA2-5313-000		В	1	TRANSISTOR			
Q641	WA2-5139-000		В	1	TRANSISTOR			
Q643	WA2-5315-000	000	В	1	TRANSISTOR			
Q644	WA2-5161-000		В	1	TRANSISTOR TRANSISTOR			
Q645	WA2-5139-000 WA2-5141-000	000	B B	1 1	TRANSISTOR			
Q648 Q649	WA2-5141-000 WA2-5139-000		В	1	TRANSISTOR			
Q049	WAZ-3133 000	000	_	-	111111020101			
Q650	WA2-5312-000	000	В	1	TRANSISTOR			
Q651	WA2-5307-000	000	В	1	TRANSISTOR	2SC4649		
Q652	WA2-5169-000	000	В	1	FET 2SK880			
Q653	WA2-5169-000		В	1	FET 2SK880	2004617		
Q654	WA2-5142-000	000	B	1	TRANSISTOR	2504017		
Q655	WA2-5161-000	000	В	1	TRANSISTOR	UMX2		
Q656	WA2-5314-000	000	В	1	TRANSISTOR	UMH6		
Q657	WA2-5301-000	000	В	1	TRANSISTOR	UMH8		
Q658	WA2-5169-000		В	1	FET 2SK880			
Q659	WA2-5141-000	000	В	1	TRANSISTOR	2SA1774		
Q660	WA2-5313-000	000	В	1	TRANSISTOR	UMB8		
Q662	WA2-5314-000		В	1	TRANSISTOR	UMH6		
0663	WA2-5314-000		В	1	TRANSISTOR	UMH6		
Q664	WA2-5160-000		В	1	TRANSISTOR	UMT2		
Q665	WA2-5142-000		В	1	TRANSISTOR	2SC4617		
0666	WA2-5139-000	000	В	1	TRANSISTOR	DTC144EE		
Q667	WA2-5141-000	000	В	1	TRANSISTOR	2SA1774		
0668	WA2-5142-000	000	В	1	TRANSISTOR	2SC4617		
Q669	WA2-5142-000	000	В	1	TRANSISTOR	2SC4617		
Q670	WA2-5142-000	000	В	1	TRANSISTOR	2SC4617		
Q671	WA2-5139-000	000	В	1	TRANSISTOR	DTC144EE		
0672	WA2-5142-000	000	В	1	TRANSISTOR	2SC4617		
Q673	WA2-5142-000	000	В	1	TRANSISTOR	2SC4617		
Q674	WA2-5147-000	000	В	1	TRANSISTOR			
Q675	WA2-5142-000	000	В	1	TRANSISTOR	2SC4617		
Q676	WA2-5147-000	000	В	1	TRANSISTOR	UMZl		
Q677	WA2-5139-000	000	В	1	TRANSISTOR	DTC144EE		
Q679	WA2-5141-000	000	В	1	TRANSISTOR	2SA1774		
Q680	WA2-5142-000	000	В	1	TRANSISTOR			
Q681	WWA2-5142-00	0 000	В	1	TRANSISTOR	R 2SC4617		
Q682	WA2-5165-000	000	В	1	TRANSISTOR			
Q683	WA2-5314-000		В	1	TRANSISTOR			
Q684	WA2-5141-000		В	1	TRANSISTOR			
Q685	WA2-5161-000		В	1	TRANSISTOR			
Q686	WA2-5139-000	000	В	1	TRANSISTOR	DTC144EE		
Q687	WA2-5161-000	000	В	1	TRANSISTOR			
Q688	WA2-5314-000	000	В	1	TRANSISTOR			
Q̃689	WA2-5142-000	000	В	1	TRANSISTOR			
Q690	WA2-5139-000		В	1	TRANSISTOR	DTC144EE		
Q924	WA2-5169-000	000	В	1	FET 2SK880			
Q931	WA2-5141-000	000	В	1	TRANSISTOR			
Q932	WA2-5142-000	000	В	1	TRANSISTOR			
Q933	WA2-5142-000	000	В	1	TRANSISTOR			
Q935	WA2-5142-000	000	В	1	TRANSISTOR		•	
Q937	WA2-5139-000	000	В	1	TRANSISTOR	DTC144EE		
Q938	WA2-5142-000	000	В	1	TRANSISTOR			
Q939	WA2-5161-000		В	1	TRANSISTOR			
Q940	WA2-5141-000		В	1	TRANSISTOR			
Q941	WA2-5161-000		В	1	TRANSISTOR			
Q943	WA2-5141-000	000	В	1	TRANSISTOR	2SA1774		

	SYMBOL	PART NO.	C	LASS	QTY	DESCRIPTION	REMARKS
	0945	WA2-5142-000	000	В	1	TRANSISTOR 2SC4617	
	Q1001	WA2-1132-000		B	ī	TRANSISTOR FMA2-T98	
	Q1001 Q1002	WA2-1337-000		В	ī	TRANSISTOR 2SC4081	
	01002	WA2-5419-000		В	ī	TRANSISTOR 2SB1122	
	01003	WA2-5419-000		В	ī	TRANSISTOR FP101	
	Q1004	WAZ 3230 000	000	2	_		
	Q1005	WA2-1406-000		В	1	TRANSISTOR DTC124EU	
	Q1006	WA2-5149-000		В	1	TRANSISTOR 2SB1412F5	
	Q1007	WA2-5290-000	000	В	1	TRANSISTOR FP101	
	Q1008	WA2-5290-000	000	В	1	TRANSISTOR FP101	
	Q1009	WA2-5290-000	000	В	1	TRANSISTOR FP101	
	01010	WA2-1400-000	000	В	1	TRANSISTOR 2SA1576	
	Q2001	WA2-5360-000		В	1	FET 2SK662QR	
	Q2002	WA2-5141-000		В	1	TRANSISTOR 2SA1774	
	Q2002 Q2003	WA2-5142-000	000	В	ī	TRANSISTOR 2SC4617	
	02004	WA2-5161-000		В	ī	TRANSISTOR UMX2	
	Q200.	•					
	Q2005	WA2-5142-000	000	В	1	TRANSISTOR 2SC4617	
	Q2006	WA2-5142-000	000	В	1	TRANSISTOR 2SC4617	
	Q2201	WA2-5141-000	000	В	1	TRANSISTOR 2SA1774	
	02202	WA2-5160-000	000	В	1	TRANSISTOR UMT2	
	Q2203	WA2-5141-000	000	В	1	TRANSISTOR 2SA1774	
	03304	(2) 5161-000	000	р	1	TRANSISTOR UMX2	
	Q2204	WA2-5161-000	000	В			
	Q2205	WA2-5147-000	000	В	1	TRANSISTOR UMZ1	
	Q2206	WA2-5161-000	000	В	1	TRANSISTOR UMX2	
	Q2207	WA2-5139-000		В	1	TRANSISTOR DTC144EE	
	Q2208	WA2-5160-000	000	В	1	TRANSISTOR UMT2	
	Q2209	WA2-5147-000	000	В	1	TRANSISTOR UMZ1	
	02210	WA2-5142-000		В	1	TRANSISTOR 2SC4617	
	Q2211	WA2-5147-000	000	В	1	TRANSISTOR UMZ1	
	Q2212	WA2-5161-000	000	В	ī	TRANSISTOR UMX2	
	Q2212	WA2-5141-000		В	ī	TRANSISTOR 2SA1774	
		51.60 000	000		,	MD ANGTOMOD (IMP)	
	Q2214	WA2-5160-000		В	1	TRANSISTOR UMT2	
	Q2215	WA2-5147-000		В	1	TRANSISTOR UMZ1	
	Q2401	WA2-5162-000		В	1	TRANSISTOR UMH5	
	Q2402	WA2-5162-000	000	В	1	TRANSISTOR UMH5	
	Q2405	WA2-5315-000	000	В	1	TRANSISTOR UMB5	
	Q2406	WA2-5141-000	000	В	1	TRANSISTOR 2SA1774	
	Q2901	WA2-0839-000		В	1	TRANSISTOR 2SA1226	
	Q2902	WA2-1498-000		В	ī	TRANSISTOR 2SAl162	
Δ	02904	WA2-5423-000		В	ī	TRANSISTOR 2SD968-S	
کفک	Q4101	WA2-5155-000		В	ī	TRANSISTOR DTAll4EE	
				_		mpayor cmop pmol AARR	
	Q4102	WA2-5139-000		В	1	TRANSISTOR DTC144EE	
	Q4103	WA2-5272-000		В	1	TRANSISTOR IMH14	
	Q4104	WA2-5272-000		В	1	TRANSISTOR IMH14	
	Q4105	WA2-5272-000		В	1	TRANSISTOR IMH14	
	Q4106	WA2-5314-000	000	В	1	TRANSISTOR UMH6	
	04107	WA2-5266-000	000	В	1	TRANSISTOR UMW1	
	04108	WA2-5266-000		В	1	TRANSISTOR UMW1	
	Q4100 Q4109	WA2-5139-000		В	ī	TRANSISTOR DTC144EE	
	-	WA2-5162-000		В	ī	TRANSISTOR UMH5	
	Q4110			В	i	TRANSISTOR UMH5	
	Q4111	WA2-5162-000	000	ь	1	TRANSISTOR OFFIS	
	Q4252	WA2-5160-000		В	1	TRANSISTOR UMT2	
	Q4301	WA2-5139-000	000	В	1	TRANSISTOR DTC144EE	
	Q4302	WA2-5139-000	000	В	1	TRANSISTOR DTC144EE	
	Q4303	WA2-5165-000	000	В	1	TRANSISTOR UMD2	
$\Delta$	RR1001	DH9-0555-000	000	D	1	LINK, IC FRF-1600-P005	
A	DD3.003	חשםחבבבחחח	000	D	1	LINK, IC FRF-1600-P005	
$\stackrel{lack}{\mathbb{A}}$	RR1002	DH9-0555-000			1	LINK, IC FRF-1600-P005	
<b>∠</b> \\\	RR1003	DH9-0555-000	000	D		•	
	RT001	DH9-0602-000		В	1	REMOTE CONTROL P.C.B. ASS'Y	
	SW241	WC3-5040-000		C	1	SWITCH, SLID	
	T1001	DH3-0102-000	000	С	1	TRANSFORMER	

						DEMARKS
	SYMBOL	PART NO.	CLAS	S QTY	DESCRIPTION	REMARKS
$\Delta$	T2901	DH9-0633-000	000 D	1	FLYBACK TRANSFORMER	
کفک	VC2001	VC6-0340-200		ī	CAPACITOR, TRIMMER 20pF	
	VC2001	VC6-0340-200		1	CAPACITOR, TRIMMER 20pF	
	VC4101	VC6-0340-300		1	CAPACITOR, TRIMMER 30pF	
		VR5-7780-103		ī	RESISTOR, VARIABLE 10KΩ	
	VR101	VKJ-7700 105	000 0	_		
	VR102	VR5-7780-103	000 C	1	RESISTOR, VARIABLE 10KΩ	
	VR103	VR5-7780-103	000 C	1	RESISTOR, VARIABLE $10\mathrm{K}\Omega$	
	VR104	VR5-7780-103		1	RESISTOR, VARIABLE 10KΩ	
	VR501	VR7-3180-472		1	RESISTOR, VARIABLE 4.7KΩ	
	VR502	VR7-3180-472		1	RESISTOR, VARIABLE 4.7K $\Omega$	
				_		
	VR503	VR7-3180-472	000 C		RESISTOR, VARIABLE 4.7KΩ	4257
	VR504	VR7-3180-472			RESISTOR, VARIABLE 4.7KΩ	
	VR600	VR7-3180-472	000 C		RESISTOR, VARIABLE 4.7KΩ	
	VR601	VR7-3180-472	000 C		RESISTOR, VARIABLE $4.7$ K $\Omega$	
	VR602	VR7-3180-223	000 C	1	RESISTOR, VARIABLE 22K $\Omega$	
		·ma 3100 473	000 · C	1	RESISTOR, VARIABLE 4.7K $\Omega$	
	VR603	VR7-3180-472				
	VR 604	VR7-3180-472	000 C		·	
	VR605	VR7-3180-472	000 C			
	VR606	VR7-3180-102	000 C		RESISTOR, VARIABLE 47KΩ	
	VR607	VR7-3180-473	000 C	1	RESISTOR, VARIABLE 4786	
	VR608	VR7-3180-472	000 C	1	RESISTOR, VARIABLE 4.7KΩ	
	VR609	VR7-3180-223			RESISTOR, VARIABLE 22KΩ	
	VR610	VR7-3180-102		_	RESISTOR, VARIABLE 1KΩ	
	VR611	VR7-3180-473	000 C			
	VR612	VR7-3180-472	000 C	_		
	VI(012	VIC 5100 IV				
	VR613	VR7-3180-472	000 C	1		
	VR614	VR7-3180-471	000 C	1		
	VR615	VR7-3180-102		1	RESISTOR, VARIABLE $1$ K $\Omega$	
	VR616	VR7-3180-223	000 C	1		
	VR617	VR7-3180-471	000 C	: 1	RESISTOR, VARIABLE 470 $\Omega$	
			000	. 1	RESISTOR, VARIABLE 1KΩ	
	VR1001	VR5-7780-102				
	-VR1002	VR5-7780-472				****
	VR1003	VR5-7780-102			<del>_</del> <del>_</del>	
	VR1004	VR5-7780-102				
	VR2401	VR5-7780-223	000	: 1	RESISTOR, VARIABLE $22 \mathrm{K}\Omega$	
	VR2901	VR7-2100-201	000	: 1	RESISTOR, VARIABLE 200 $\Omega$	
	VR2902	VR7-2100-333		1		
$\Delta$	VR2903	VR7-2170-305		1		
4	VR2904	VR7-0710-105		1		
	VR4101	VR7-3180-223				
	TOTEM	VI() 5100 225		_		
	VR4301	VR7-3180-223	000			
	VR4302	VR7-3180-474	000			
	X601	DH9-0616-000		1	OSCILLATOR, CRYSTAL (4.43MHz)	
	X2001	DH9-0622-000	000	1	OSCILLATOR, CRYSTAL (28.4MHz)	
	X2002	DH9-0621-000	000	1	OSCILLATOR, CRYSTAL (17.7MHz)	
	V2201	WK2-5294-000	000 (	2 1	OSCILLATOR, SERAMIC (16MHz)	
	X2301	WK2-5294-000 WK2-5262-000				
	X4101	WK2-5262-000 WK2-5269-000				
	X4102	MV5-2503-000	000	. 1	Collinsia (21000ms)	

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
12	DA1-3065-000 0	00 C	1	TAB, RETAINER	
10	DA1-3106-000 C		2	SCREW	
12	DA1-3148-000 C		1	BELT, CAPSTAN	
12	DA1-3151-000 0		1	GEAR	
12	DA1-3152-000 0	000 C	1	GEAR, CAM	
12	DA1-3153-000 0	00 C	1	GEAR	
12	DA1-3154-000 0		1	GEAR, SL	
12	DA1-3155-000 0		1	GEAR	
10	DA1-3156-000 0		2	GEAR	
12	DA1-3161-000 0	00 C	1	RACK, SL	
10	DA1-3163-000 0	00 C	1	LOCK LEVER, SUPPLY REEL	*
12	DA1-3165-000 0		1	LEVER, EJECT	4
10	DA1-3166-000 0		1	BRAKE, LOADING	
12 12	DA1-3167-000 0 DA1-3168-000 0		1	LEVER, NEUTRAL	
12	DA1-3100-000 0	00 C	1	LEVER, SUPPLY MODE	
10	DA1-3170-000 0		1	HOLDER, LED	
12	DA1-3190-000 0		1	LEVER, MODE (2)	
10	DA1-3192-000 0		1	PLATE, SLIDE	
12	DA1-3195-000 0		1	LEVER, MODE (1)	
12	DA1-3196-000 0	00 C	1	LEVER, T MODE	
12	DA1-3265-000 0	00 F	2	SCREW	
12	DA1-3266-000 0		1	PLATE, GUIDE	
8,10,12	DA1-3312-000 0		9	WASHER	
10,12	DA1-3313-000 0		6	WASHER	
12	DA1-3315-000 0	00 F	1	SCREW	
12	DA1-3316-000 0	00 F	2	SCREW	
12	DA1-3317-000 0		2	SCREW	
10	DA1-3323-000 0		1	SCREW	
2 10	DA1-4009-000 0		2	SCREW	
10	DA1-5284-050 0	00 C	1	LEVER, LOCK	
10	DA1-5285-000 0	00 C	2	HOLDER, SENSOR	
10	DA1-5286-000 0		1	RELEASE, RL	
10	DA1-5287-000 0		1	LEVER, TB	
10 10	DA1-5288-000 0 DA1-5289-000 0		1	STOPPER, P12 ARM	
10	DA1-3209-000 0	00 C	1	DRIVE LEVER, RL	
10	DA1-5290-000 0	00 C	1	PIN	•
8	DA1-5292-000 0		1	GUIDE, PRINTED CORD	
8	DA1-5293-000 00		1	FRAME	
10	DA1-5296-000 00 DA1-5298-000 00		1	LEVER, DOWN	
J	DAI: 3230-000 0	00 C	1	PLATE, CATCHING	
8	DA1-5302-000 00		1	SCREW	
4	DA1-5445-000 00		1	LIGHT SHIELD	
2 2	DA1-5702-000 00 DA1-5705-000 00		1	HOLDER, TRIGGER	
2	DA1-5706-000 00		1 1	COVER, LS HOLDER, FLXBLE	
	2.12 3700 000 00	,, ,	_	HOLDER, FLABLE	
4	DA1-5712-000 00		1	COVER, DRUM (2)	
6	DA1-5713-000 00		1	SEAL, E.V.F.	
6 4	DA1-5714-000 00		1	SHEET	
4	DA1-5717-000 00 DA1-5720-000 00		1 1	LIGHT SHIELD LIGHT SHIELD	
4	DA1-5726-000 00		2	TERMINAL, BATTERY	
4 2	DA1-5728-000 00 DA1-5736-000 00		1 1	SPACER	
2	DA1-5736-000 00		1	KNOB, BATTERY EJECT HOLDER, BATTERY EJECT KNOB	
2	DA1-5739-000 00		i	PLATE, STRAP(A) ATTACHMENT	
2	DA1-5740-000 00	00 C	1	PLATE, STRAP(B) ATTACHMENT	
2	DA1-5742-000 00		î	STRAP, HAND	
2	DA1-5746-000 00		ī	EYE CAP	
6	DA1-5752-000 00	0 C	1	PLATE, E.V.F.	
6	DA1-5753-000 00	00 C	1	SPRING, PLATE	

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
6	DA1-5754-000	000 B	1	HOLDER, E.V.F.	
2	DA1-5756-000		1	SPRING, PLATE	
4	DA1-5758-000		1	HOLDER, C-MAIN P.C.B. ASS'Y	
4	DA1-5764-000		1	LIGHT SHELD	
6	DA1-5775-000		1	STOPPER, E.V.F.	
2	DA1-5779-000	000 B	1	SEAL, LS COVER	•
2	DA1-5905-000	000 B	1	COVER, REAR (2)	
2	DA1-5907-000	000 B	1	COVER, AV	
2	DA1-5912-000		1	SHEET, RUBBER HOLDER, RECORDER (1)	
4	DA1-5920-000		1 2	HOLDER, RECORDER (2)	
4	DA1-5921-000 DA1-5922-000		1	HOLDER, AUDIO P.C.B. ASS'Y	5
4 2	DA1-5923-000	000 B	ī	KNOB, SWITCH	
4	DA1-5924-000		ī	HOLDER	
2	DA1-5927-000		ī	COVER, DRUM (1)	
4	DA1-5934-000	000 C	1	CUSHION, LENS	
2	DA1-5935-000	000 C	1	COVER, MICROPHONE	
4	DA1-6065-000	000 C	1	LIGHT SHIELD	
12	DA1-6162-000		1	ROLLER	
8	DA1-6163-000		1	ROLLER	
12	DF1-0607-000		1	EARTH ASS'Y	
12	DF1-0621-000	000 C	1	GEAR, MS	
12	DF1-0622-000		1	GEAR, SLIDE	
12	DF1-0625-050		1	GEAR, CAPSTAN	
12	DF1-0626-000		1	GEAR, DRIVE	
12	DF1-0629-000		1	POST 5 ASS'Y POST 9 ASS'Y	
12	DF1-0630-000		1 1	BASE ASS'Y, POST 2	
12	DF1-0633-000 DF1-0646-000		1	LEVER, STOP	
10 12	DF1-0040-000 DF1-1172-000	-	ī	LEVER, PINCH	
12	DG1-0979-000	000 C	1	LOADING ASS'Y	
8	DG1-0984-000		1	IDLER ASS'Y	
10	DG1-0985-000		1	LIMITTER, SLB	
10	DG1-0986-000		1	BRAKE, TAKE UP REEL	
10	DG1-0989-000		1	PINCH ROLLER ASS'Y	
10	DG1-0990-000		1	ARM, P12	
10	DG1-0992-000		1	TENSION ARM ASS'Y	
8	DG1-0996-010		1	MODE MOTOR ASS'Y	
12	DG1-0997-000		1	CAPSTAN MOTOR	
6	DG1-1752-000			CRT ASS'Y CASSETTE COMPARTMENT ASS'Y	
8	DG1-1945-000		1 1	TENSION BAND ASS'Y	
10	DG1-1949-000 DG1-2074-000		1	REEL, SUPPLY	
10	DG1-2074-000 DG1-2075-000		1	REEL, TAKE UP	
10	DG1-2073-000 DG1-2130-000	000 C	î	P.C.B. ASS'Y, POWER SUPPLY	
6	DG1-2163-000	000 C	1	P.C.B. ASS'Y, E.V.F.	
2	DG1-2172-000	000 B	1	COVER, REAR	
2	DG1-2174-000		1	FINDER ASS'Y	
2	DG1-2176-000		1	COVER, LS	
2	DG1-2177-000		1	CAP, LENS	
12	DG1-2280-000	000 E	1	DRUM ASS'Y	
12	DG1-2331-010	000 C	1	P4 BASE ASS'Y	
4	DG1-3091-000	000 C	1	P.C.B. ASS'Y, JACK P.C.B. ASS'Y, AUDIO	
4 4	DG1-3094-000 DG1-3095-000	000 C	1	P.C.B. ASS'Y, CAMERA MAIN	
4	DG1-3096-000	000 C	1	P.C.B. ASS'Y, RECORDER MAIN	
2	DG1-3100-000		1	COVER, FRONT	
2	DG1-3105-000		1	P.C.B. ASS'Y, CAMERA KEY	
4	DG1-3107-000	000 C	1	HOLDER, RECORDER	
2	DG1-3111-000		1	COVER, CASSETTE	

	PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
	12	DH2-1220-000	000 C	1	PRINTED CORD, DRUM	
	4	DH2-1532-000	000 C	1	FPC	
	6	DH2-1533-000		_	FPC	
	12	DH2-1601-000		1 1	PRINTED CORD, M CHASSIS PRINTED CORD, S CHASSIS	
	10	DH2-1602-000				
		DH3-0102-000		1	TRANSFORMER IC CXAll27M	
		DH4-0189-000 DH4-0196-000		1 1	IC CXA127M	
		DH4-0200-000			IC CXA1234AR	
		DH4-0264-000		1	IC CXA1208R	
		DH4-0297-000	000 B	2	IC CXL1506	
		DH4-0318-000		1	IC CXAll27AM	
		DH4-0372-000			IC µPD6451AGT-810 IC PST574C	
		DH4-0389-000 DH4-0390-000			IC LD5088	
		DH4-0406-000		1	IC LD5090	
		DH4-0411-000			IC MM1058XF	
		DH4-0510-000			IC MC13400FUEF	
		DH4-0511-000		1	IC CXD2107M	
		DH4-0514-000	000 B	1	IC CXA1207AR	
		DH4-0525-000	000 B	1	IC SC405631FB	
		DH4-0549-002		1	IC CXP80624-117Q	
		DH4-0564-000	000 B		IC CXA1481AR	
	10 10	DH9-0468-000 DH9-0469-000		1 2	SWITCH, PUSH PHOTO REFLECTOR	
					LED GL452	
	10 10	DH9-0470-000 DH9-0508-000			PHOTO TRANSISTOR PT4850F	
	10	DH9-0509-000		ī	SWITCH	
	4	DH9-0554-000		1	LITHIUM BATTERY	
$\Delta$		DH9-0555-000	000 D	3	LINK, IC FRF-1600-P005	
	4	DH9-0574-000	000 C	1	PIN JACK	
		DH9-0602-000			REMOTE CONTROL P.C.B. ASS'Y	
	4	DH9-0603-000		1 1	CRYSTAL FILTER JACK, AV	
Δ	4	DH9-0607-001 DH9-0615-000		ī	COIL, LINEARITY	
Z±3						
		DH9-0616-000			OSCILLATR, CRYSTAL (4.43MHz) OSCILLATR, CRYSTAL (17.7MHz)	
		DH9-0621-000 DH9-0622-000			OSCILLATR, CRYSTAL (28.4MHz)	
		DH9-0625-000		ī	LED SLH -34VT144F	
	2	DH9-0627-000	000 B	1	MICROPHONE ASS'Y	
$\Delta$		DH9-0633-000	000 D	1	FLYBACK TRANSFORMER	
_	10	DS1-5216-000		1	SPRING, COIL	
	2	DS1-5243-000		1	SPRING, COIL	
	8 8	DS1-5250-000 DS1-5251-000		1 1	SPRING, COIL SPRING, COIL	
					·	
	10	DS1-5252-000 DS1-5253-000		1	SPRING, COIL SPRING, COIL	
	10 10	DS1-5254-000		i	SPRING, COIL	
	6	DS1-5255-000		1	SPRING, COIL	
	10	DS1-6070-000	000 C	1	SPRING, COIL	
	10	DS1-6081-000		1	SPRING, COIL	
	8	DY1-7212-000		1	SLIDE CHASSIS ASS'Y	
	8	DY1-7213-000		1 1	MAIN CHASSIS ASS'Y UPPER DRUM ASS'Y	
	12 14	DY1-7309-000 DY1-7353-000		1	WIRELESS CONTROLLER WL-51EXP	
	6	DY1-7354-000	000 B	1	COVER, TOP E.V.F.	
	6	DY1-7356-000	000 C	1	ZOOM LENS ASS'Y	
	6	DY1-7357-000			COVER, BOTTOM E.V.F.	
	2 2	DY1-7361-000 DY1-7381-000			KNOB, T/W COVER, TOP	
	۷.	J11 , J01 000	2	_	•	

PAGE	PART NO.	CLAS	S QTY	DESCRIPTION	REMARKS
2	DY1-7384-000		1	COVER, LEFT	
4	DY1-7386-000 DY1-7389-000	000 B	1 1		
2 12	DY2-1400-000	000 C	1 1		
12	DY2-1409-000		1	MOTOR, DRUM	
14	DY3-4201-000			CAP, LENS	
14 14	DY3-4209-000 DY3-4210-000		l l	CAP, DUST (WD-37) CAP, DUST (TL-37)	
14	DY4-2984-000	000 B	1 1	COVER, BATTERY	
	VC6-0340-200	000 C	2	CAPACITOR, TRIMMER 20pf	
	VC6-0340-300		1		
Δ Δ Δ	VC7-1360-102 VC7-1380-152				
$\overline{\Lambda}$	VC7-1430-562				
	VR5-7780-102			RESISTOR, VARIABLE 1KΩ	
	VR5-7780-103		4 1	RESISTOR, VARIABLE 10KΩ RESISTOR, VARIABLE 22KΩ	
	VR5-7780-223 VR5-7780-472				
	VR7-0710-105		1	RESISTOR, VARIABLE 1MΩ	
	VR7-2100-201		1	RESISTOR, VARIABLE 200 $\Omega$	
•	VR7-2100-333		1	RESISTOR, VARIABLE 33KΩ	
$\triangle$	VR7-2170-305 VR7-3180-102		1 3		
	VR7-3180-102				
	VR7-3180-471		2	RESISTOR, VARIABLE $470\Omega$	
	VR7-3180-472			RESISTOR, VARIABLE 4.7KΩ	
	VR7-3180-473 VR7-3180-474		2 1	RESISTOR, VARIABLE $47K\Omega$ RESISTOR, VARIABLE $470K\Omega$	
	VS1-5051-006	000 C	1	CONNECTOR 6P	
	VS1-5149-015	000 C	ĩ	CONNECTOR 15P	
	VS1-5256-008		1		
	VS1-5256-016	000 C	2 2	CONNECTOR 16P CONNECTOR 20P	•
	VS1-5256-020 VS1-5316-015			CONNECTOR 15P	
	VS1-5347-008		2	CONNECTOR 8P	
6	VS1-5446-006		1		
	VS1-5469-010	000 C	1		
	VS1-5469-016 VS1-5469-018			CONNECTOR 16P CONNECTOR 18P	
	VS1-5469-020	-	ī	CONNECTOR 20P	
	VS1-5469-028			CONNECTOR 28P	
	VS1-5470-018 VS1-5470-020			CONNECTOR 18P CONNECTOR 20P	
	VS1-5470-020 VS1-5470-028			CONNECTOR 28P	
	VS1-5471-010			CONNECTOR 10P	
	VS1-5471-016			CONNECTOR 16P	
	WA1-0989-000 WA1-1084-000			DIODE, ZENER MA3100 DIODE MA110	
	WA1-1084-000 WA1-1123-000			DIODE MAIIO DIODE AG01Z	
	WA1-5122-000			DIODE DAN222	
	WA1-5227-000			DIODE 1SS362	
	WA1-5231-000			DIODE DAP222 DIODE HN2D01FU	
	WA1-5232-000 WA1-5236-000			DIODE HN2DOIFO DIODE DA221	
	WA1-5249-000			DIODE 1SV223	
	WA1-5350-000			DIODE MA724	
	WA1-9003-000 WA2-0411-000			DIODE SB05-05CP TRANSISTOR 2SA1314BC	
	WA2-0411-000 WA2-0839-000			TRANSISTOR 2SA1314BC TRANSISTOR 2SA1226	
	WA2-1132-000			TRANSISTOR FMA2-T98	

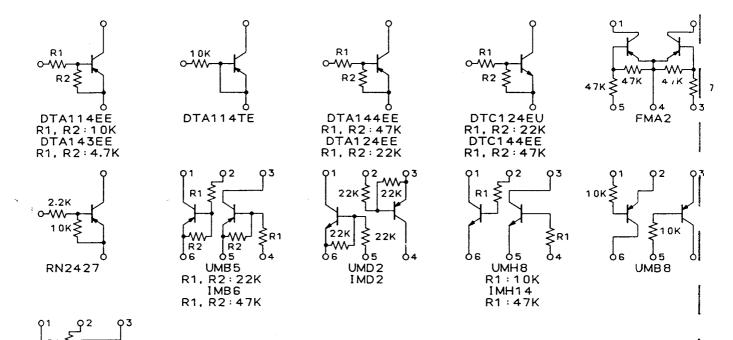
PAGE	PART NO.	CLAS	S QTY	DESCRIPTION	REMARKS
	WA2-1198-000	000 B	1	TRANSISTOR IMD2	
	WA2-1235-000		1	TRANSISTOR IMB6	
	WA2-1337-000			TRANSISTOR 2SC4081	
	WA2-1400-000	000 B	2	TRANSISTOR 2SA1576	
	WA2-1406-000			TRANSISTOR DTC124EU	
			_		
	WA2-1498-000			TRANSISTOR 2SA1162	
	WA2-5139-000			TRANSISTOR DTC144EE	
	WA2-5141-000			TRANSISTOR 2SA1774	
	WA2-5142-000			TRANSISTOR 2SC4617	
	WA2-5147-000	000 B	6,	TRANSISTOR UMZ1	
	WA2-5149-000	000 B	1	TRANSISTOR 2SB1412F5	
	WA2-5155-000	000 B	1	TRANSISTOR DTAll4EE	
	WA2-5160-000	000 B	7	TRANSISTOR UMT2	
	WA2-5161-000	000 B	13	TRANSISTOR UMX2	
	WA2-5162-000	000 B	5	TRANSISTOR UMH5	
	WA2-5165-000		6	TRANSISTOR UMD2	
	WA2-5169-000			FET 2SK880	
	WA2-5206-000		1	TRANSISTOR DTA124EE	
	WA2-5266-000		2	TRANSISTOR UMW1	
	WA2-5272-000	000 B	3	TRANSISTOR IMH14	
	WA2-5290-000	000 B	4	TRANSISTOR FP101	
	WA2-5301-000	000 B	2	TRANSISTOR UMH8	
	WA2-5306-000	000 B	1	TRANSISTOR DTA143EE	
	WA2-5307-000	000 B	5	TRANSISTOR 2SC4649	
	WA2-5312-000	000 B	1	TRANSISTOR DTAll4TE	
	WA2-5313-000	000 B	2	TRANSISTOR UMB8	
	WA2-5314-000		9	TRANSISTOR UMH6	
	WA2-5315-000		4		
	WA2-5323-000	000 B			
	WA2-5346-000		_	TRANSISTOR 2SA1362	
	WA2-5347-000	000 B	1	TRANSISTOR RN2427	
	WA2-5360-000			FET 2SK662QR	
	WA2-5419-000			TRANSISTOR 2SB1122	
$\Delta$	WA2-5423-000			TRANSISTOR 2SD968-S	
<u></u>	WA3-4264-000			IC SC14S66F	
	WA3-5657-000	000 в	1	IC SC14S70F	
•	WA3-6006-000		1		
	WA3-6112-000		ī		
	WA3-6307-000		i	IC MB88344	
	WA3-6369-000		ī	IC CXD1256R	
	WA3-6392-000		1	IC µPD16506GR	
	WA3-6436-000		1	IC NJU4066BV	
	WA4-0907-000		1	IC BA6303F	
	WA4-1145-000		1	IC RH5VA45AA	
	WA4-1248-000		1	IC µPC324G2	
	WA4-5044-000		1	IC CXD1159Q	
	WA4-5129-000		1	IC S-87050AF	
	WA4-5316-000		2	IC TK11447	
	WA4-5336-000	000 B	1	IC MPC1720ML2	
	WA4-5337-000	000 в	1	IC LB1837M	
	WA4-5350-000		1	IC CXA1390AR	
	WA4-5351-000	000 B	1	IC CXA1391R	
	WA4-5352-000	000 B	1	IC CXA1392R	
	WA4-5353-000		1	IC CXL1507N	
	WA4-5354-000	000 в	1	IC CXL5504M	
	WA4-5365-000	000 в	1	IC LA7456M	
	WA4-5402-000	000 B	1	IC RH5RA35AA	
	WA4-5403-000		1	IC RH5VA45CA	
	WA4-5413-000	000 B	1	IC NJM2902V	
	WA4-5424-000	000 в	1	IC LM311DB	

PAGE	PART NO.	CLASS	G QTY	DESCRIPTION	REMARKS
	WA4-5428-000	000 B	1	IC BA7149F	
	WA4-5435-000		2	IC LA7454W	
	WA4-5443-000	000 B	1	IC NJM2246M	
	WA4-5480-000	000 B	1	IC LM324N	
	WA4-5516-000		1	IC TB6504F	
	WA4-5518-000	000 B	1	IC MB3785PFV	
•	WA4-5525-000	000 B	1	IC LA7470V	
	WA4-5566-000	000 B	1	IC CXA1512N	
	WC3-5040-000		1	SWITCH, SLID	
6	WG8-5043-000	000 C	2	PHOTO INTERRUPTER	
	WK2-5262-000		1	OSCILLATOR, CRYSTAL (11.7MHz)	
	WK2-5269-000		1	OSCILLATOR, CRYSTAL (1.056MHz)	
	WK2-5294-000		1	OSCILLATOR, SERAMIC (16MHz)	
4	WS6-5001-000		1	JACK, MIC	
4	ws6-5007-000	000 C	1	TERMINAL, S	
12	XA1-1140-147		4	SCREW	
12	XA1-1140-259	000 F	3	SCREW	
12	XA1-1140-307	000 F	3	SCREW	
10,12	XA1-7140-147	000 F	2	SCREW	
8,10	XA1-7140-229	000 F	6	SCREW	
8,12	XA1-7140-257	000 F	6	SCREW	
10	XA1-7140-307	000 F	4	SCREW	
8,10,12	XA1-7140-357	000 F	6	SCREW	
2	XA1-7170-209	000 F	1	SCREW	
4	XA1-7170-307	000 F	3	SCREW	
2	XA1-7170-309	000 F	3	SCREW	
6	XA4-4170-457	000 F	6	SCREW	
6	XA4-6170-459	000 F		SCREW	
6	XA4-6170-559			SCREW	
6	XA4-6170-659	000 F	1	SCREW	
2	XA4-9170-229	000 F	1	SCREW	
2	XA4-9170-359	000 F		SCREW	
2,4	XA4-9170-409			SCREW	
2	XA4-9170-509	000 F		SCREW	
2	XA4-9170-609	000 F	2	SCREW	
6	XA4-9170-807			SCREW	
4	XA9-0549-000			SCREW	
4	XA9-0568-000			SCREW	
4	XA9-0609-000		_	SCREW	
2	XA9-0645-000	000 F	2	SCREW	
4	XA9-0649-000	000 F		SCREW	
12	XD2-1100-102	000 F	_	E RING	
8,10	XD2-1100-132	000 F		WASHER	
12	XD2-1100-172		_	E RING	
6	XG8-1100-582	000 C	1	BALL, STEEL	
6	YA1-0886-000	000 0	1	HOLDER, RELAY LENS	
6	YG9-5288-000	000 0	1	LENS, FRONT	
6	YH1-0253-000	000		FPC	
6	YH7-0060-000	000 0		MOTOR, PZ	
6	YH7-0061-000	000 0	: 1	MOTOR, AF	
6	YH8-0038-000 Y22-2879-000		_	IG METER IC SC418027FU	

#### CONTENTS

CHAPTER IV.	DIAGRAMS					
1.	Interconnection Diag	ram				N - 1
2. 2-1 2-2 2-3	SYSCON-SERVO SECTION	CCTION				N-3
3. 3-1 3-2 3-3 3-4 3-5	RECORDER-MAIN & POWERECORDER-MAIN & JACK	etic Diagrams  ER SUPPLY P.C.B. (SYSCOM  ( P.C.B. (VIDEO SECTION)	N-SERVO S	ECTION)		N - 8, 9 N - 10, 11 N - 12, 13
< Guide to d	iagrams >					
1. Color	coding					
Came r Red AUTO- Red	age on circuit diagra	Y C ES/CU m Recording	Red Video se	():	Drum servo sign Capstan servo s Recording	
Came Red Blue Oran Hate Reco Blu	e : nge : ched black (	Power supply line Luminance signal Chrominance signal Luminance + Chrominance signals  Capstan PWM signal Capstan ATF signal Capstan FG signal Drum PWM signal Drum FG signal	Gray	( ) : ( ) : ( ) : ( ) :	Playback chrom:	gnals  gnals  gnals  nance signal  an ATF signal  minance signal  inance signal
0ra		Component-side pattern Soldered-side pattern Parts on component-side Parts on soldered-side	de			

### 2. Equivalent circuits of digital transistors



### 3. Indications in circuit diagram

UMH5 R1, R2: 22K UMH6 R1, R2: 47K

- Resistance is represented in ohms (  $\Omega$  ).
- Capacitance is represented in farads (F).
- $\bullet$  Wattage of resistor is 1/16 W and 1/32 W unless otherwise specified.
- Withstand voltage of capacitor is 25 V unless otherwise specified.
- Voltages are measured with a digital voltmeter.
- Waveform photographs are taken by using a 10:1 probe.
- IC Nos. in P.C.B.s are listed on the bottom of diagrams.
- Nos. colored in blue correspond to the Nos. of waveform photographs.
- Voltage values and waveform photographs in circuit diagram are based on the following condition.

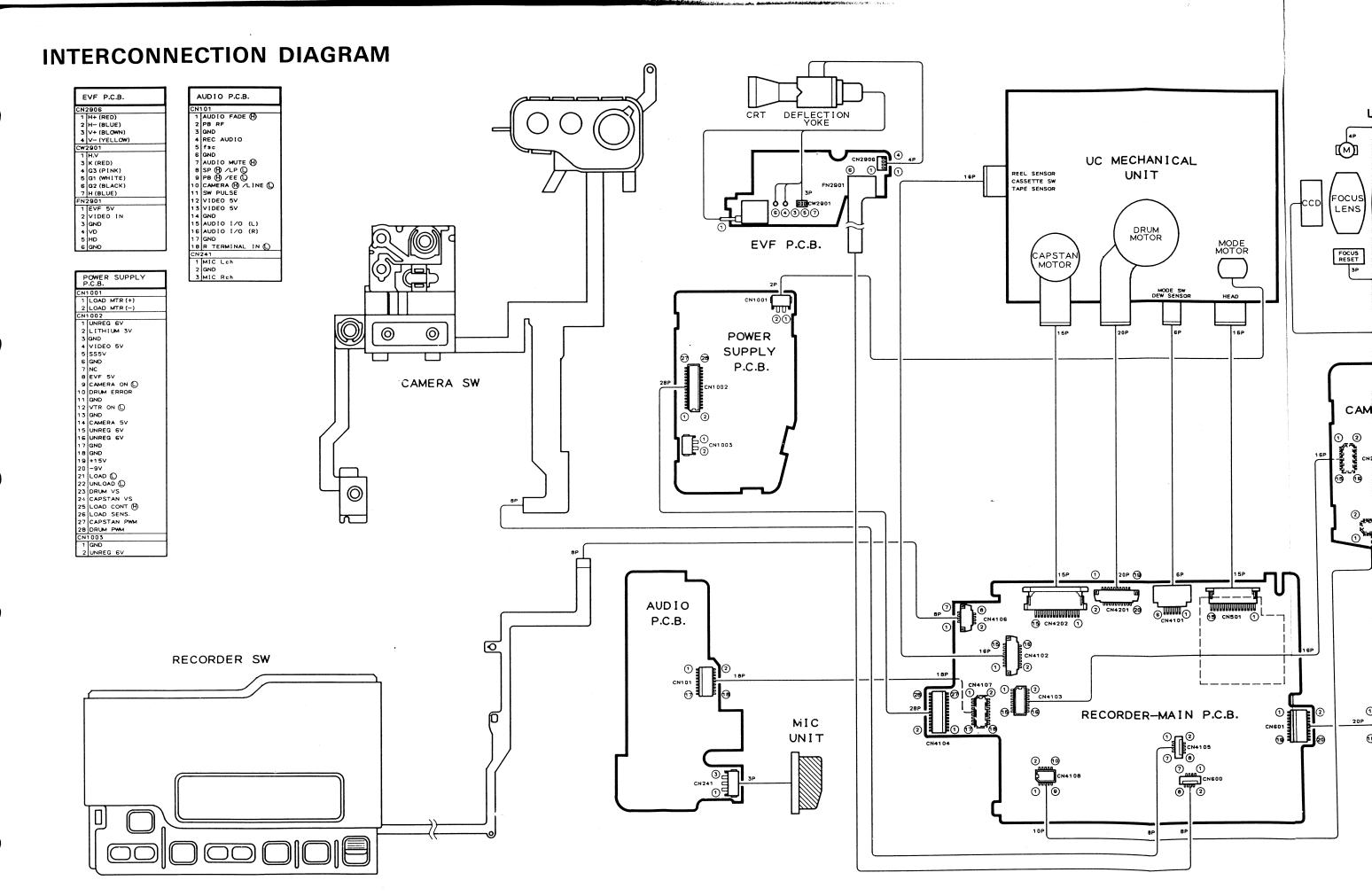
### Camera section conditions

Color bar, standard angle of view

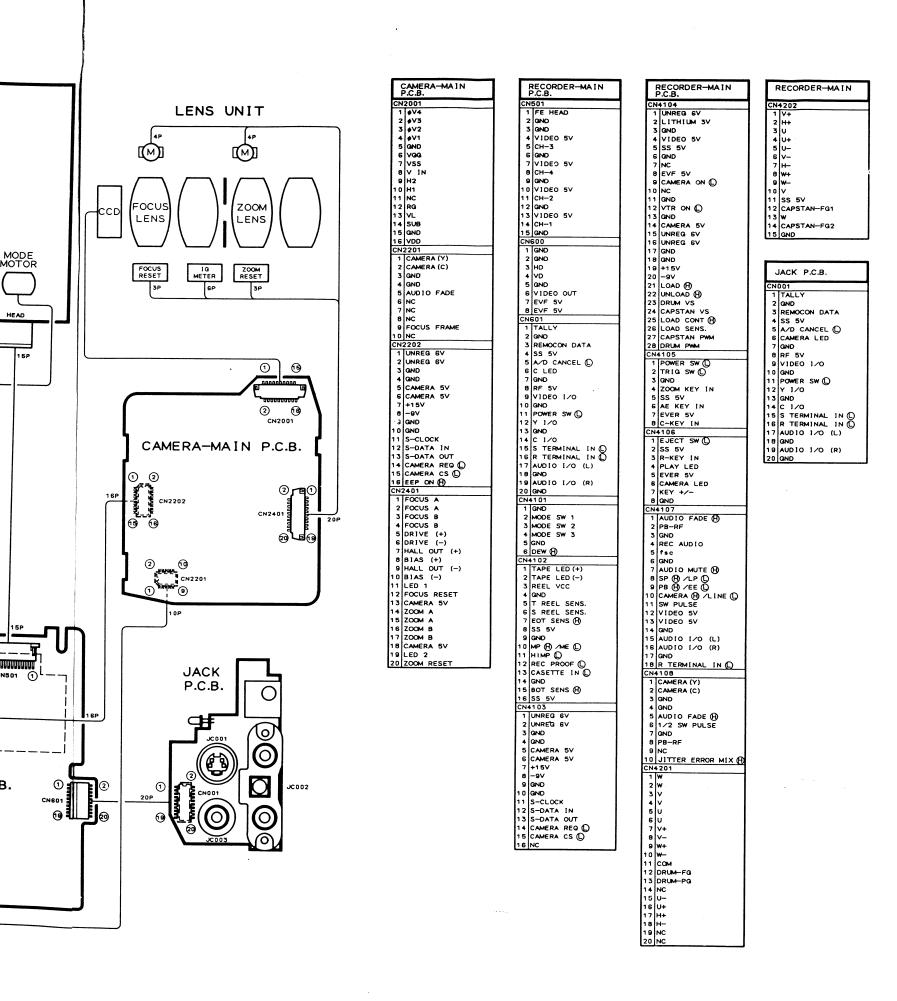
### Recorder section conditions

Recording : Color bar (pattern generator) Hi8 tape

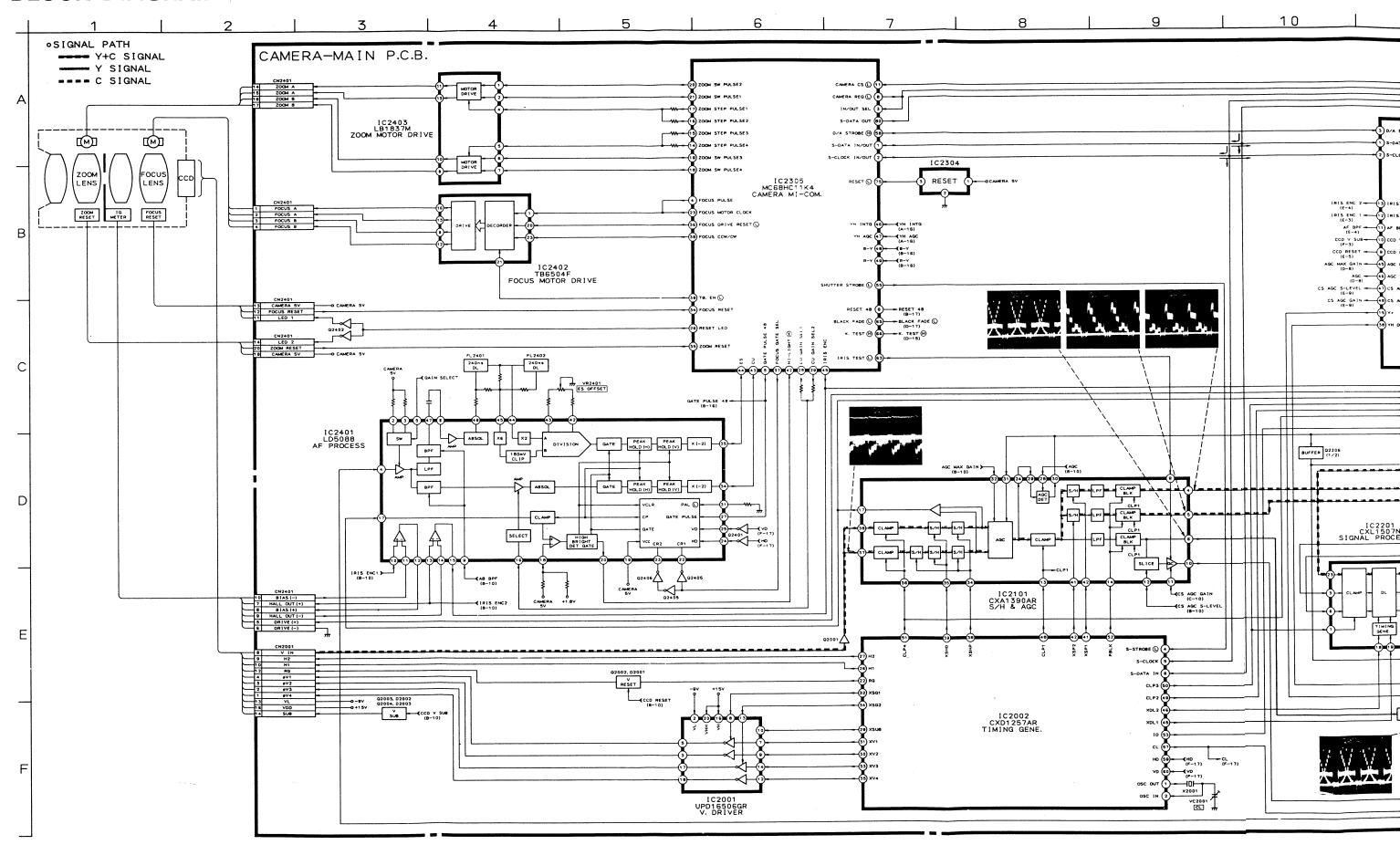
Playback : Self-recording playback (color bar) Hi8 tape

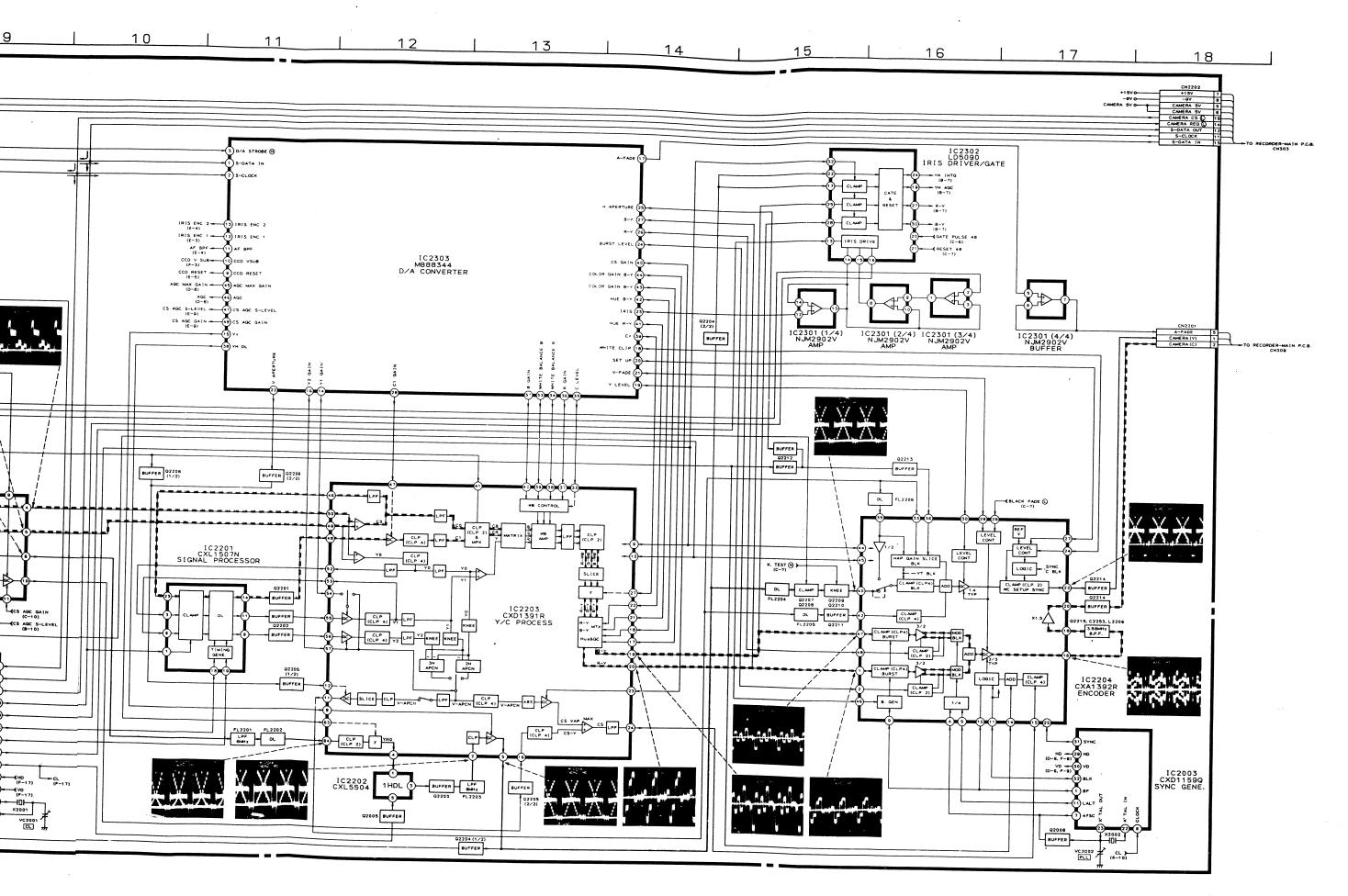


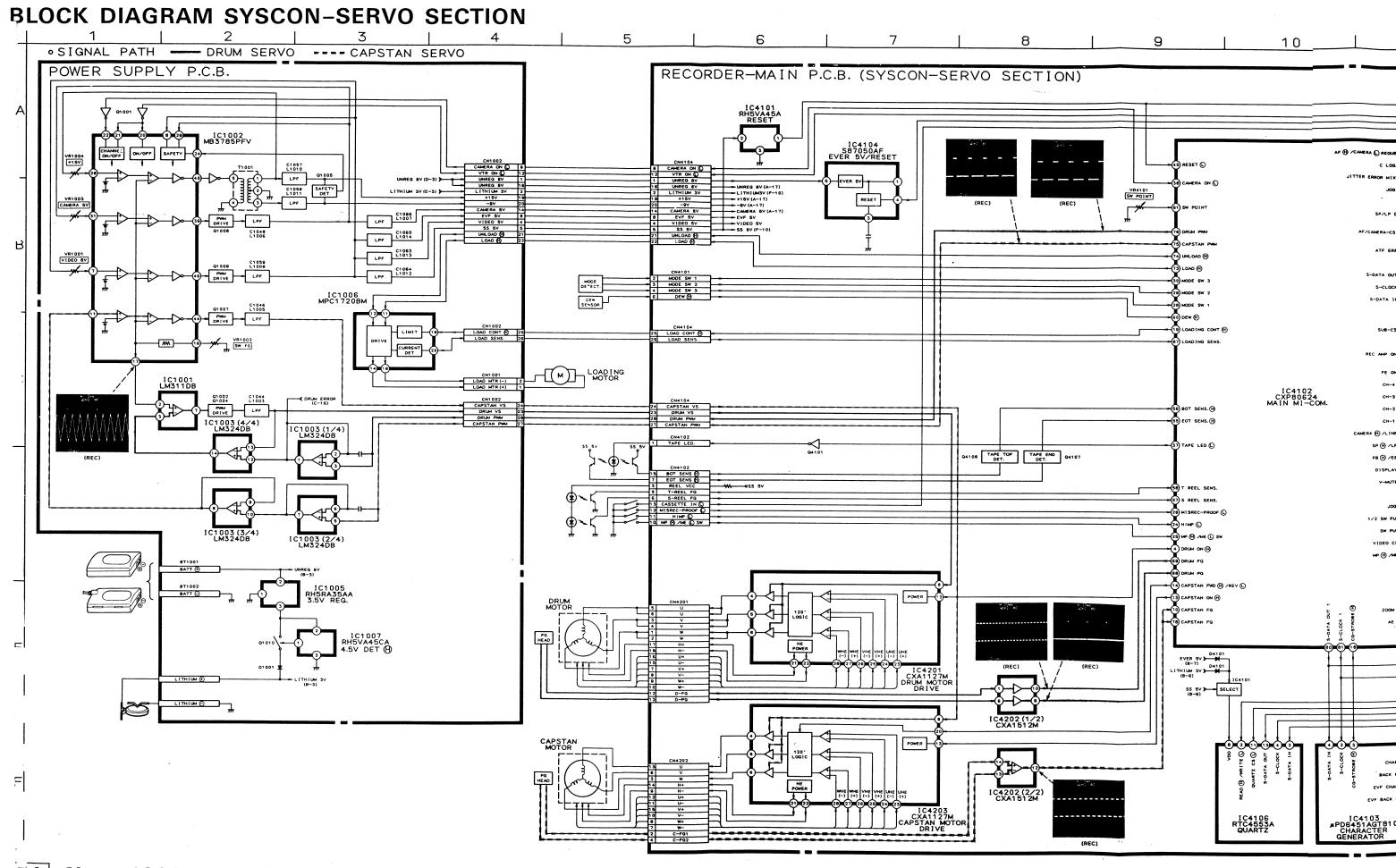
01 Nov. 1992



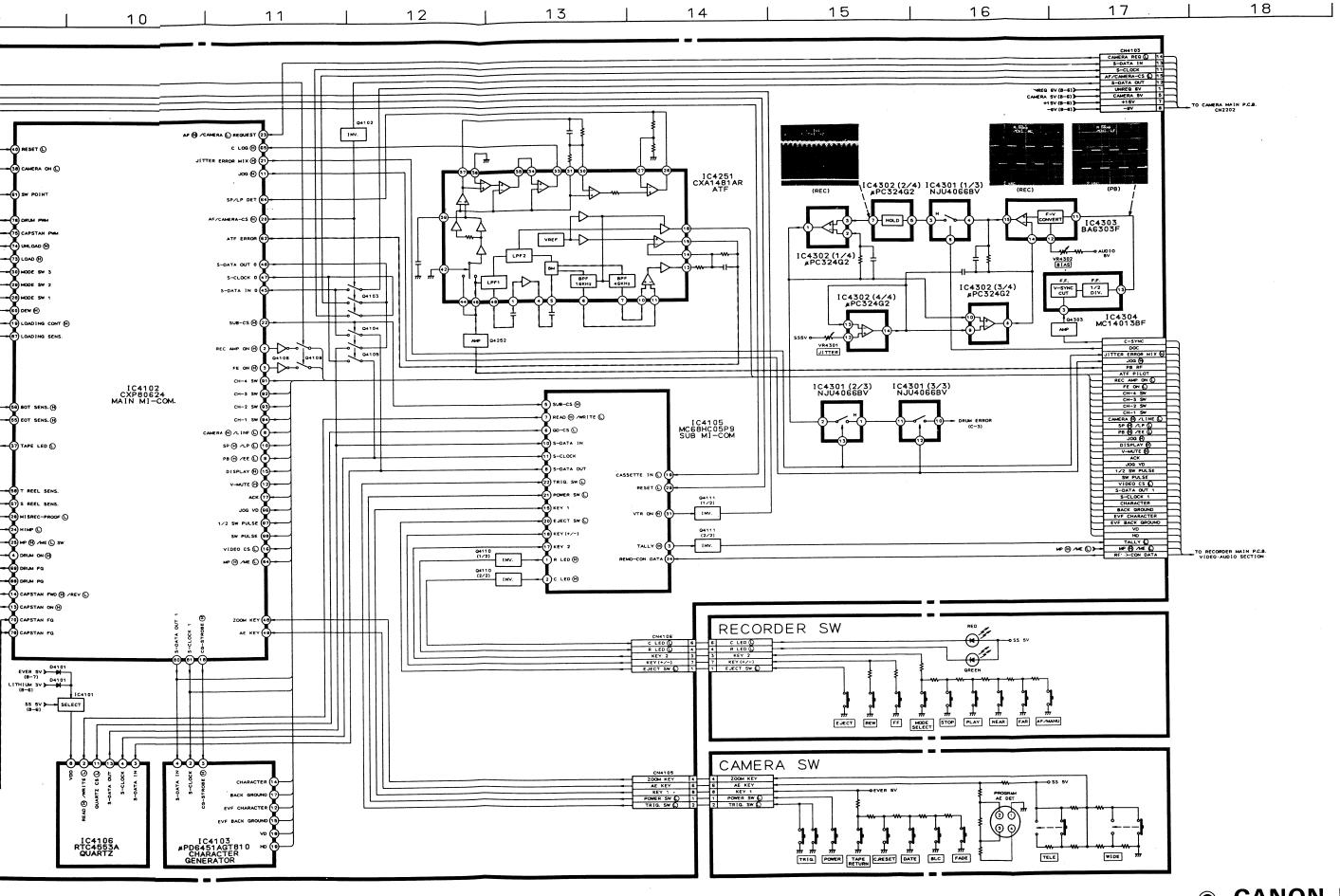
### **BLOCK DIAGRAM AUTO FOCUS · CAMERA SECTION**



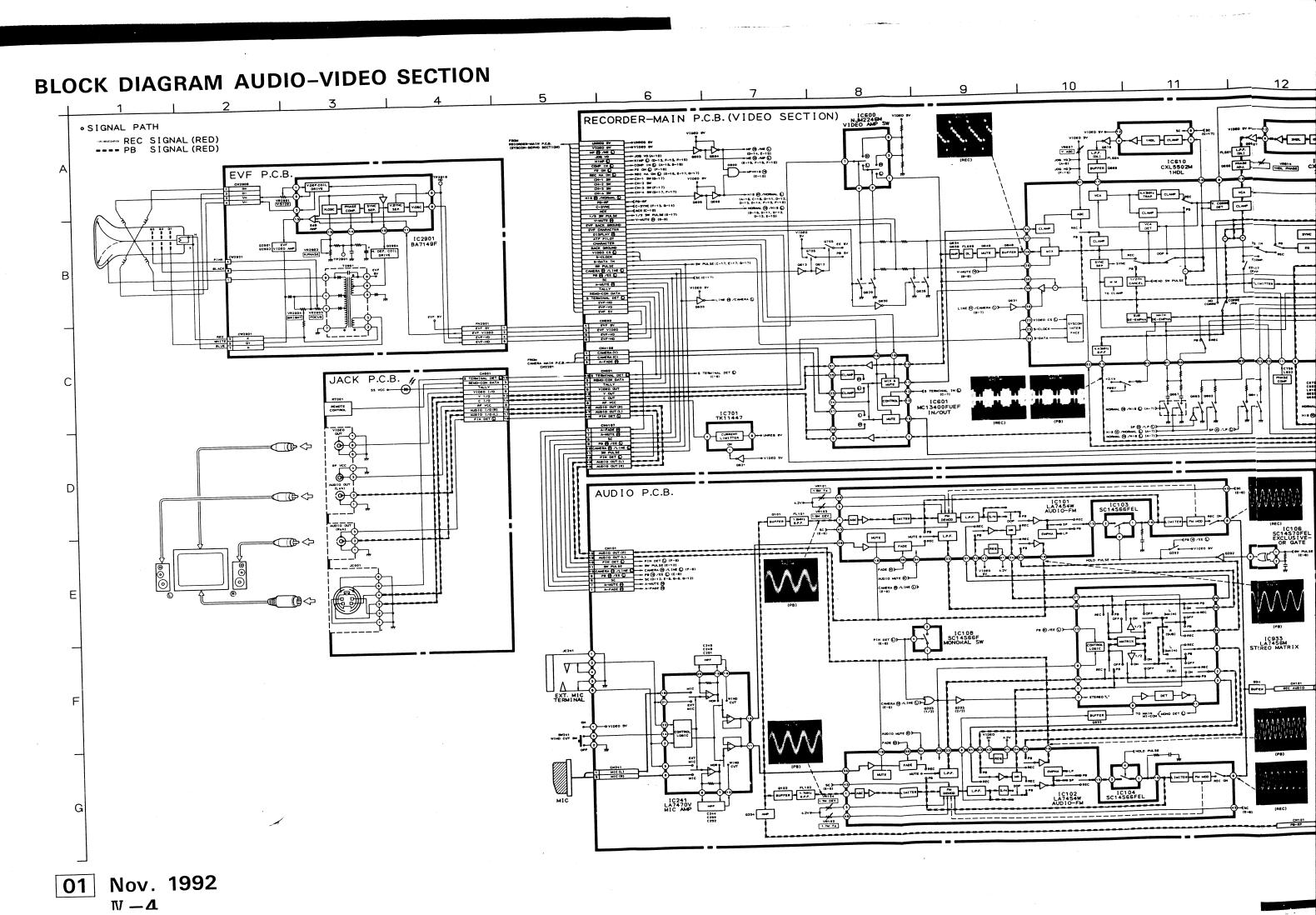


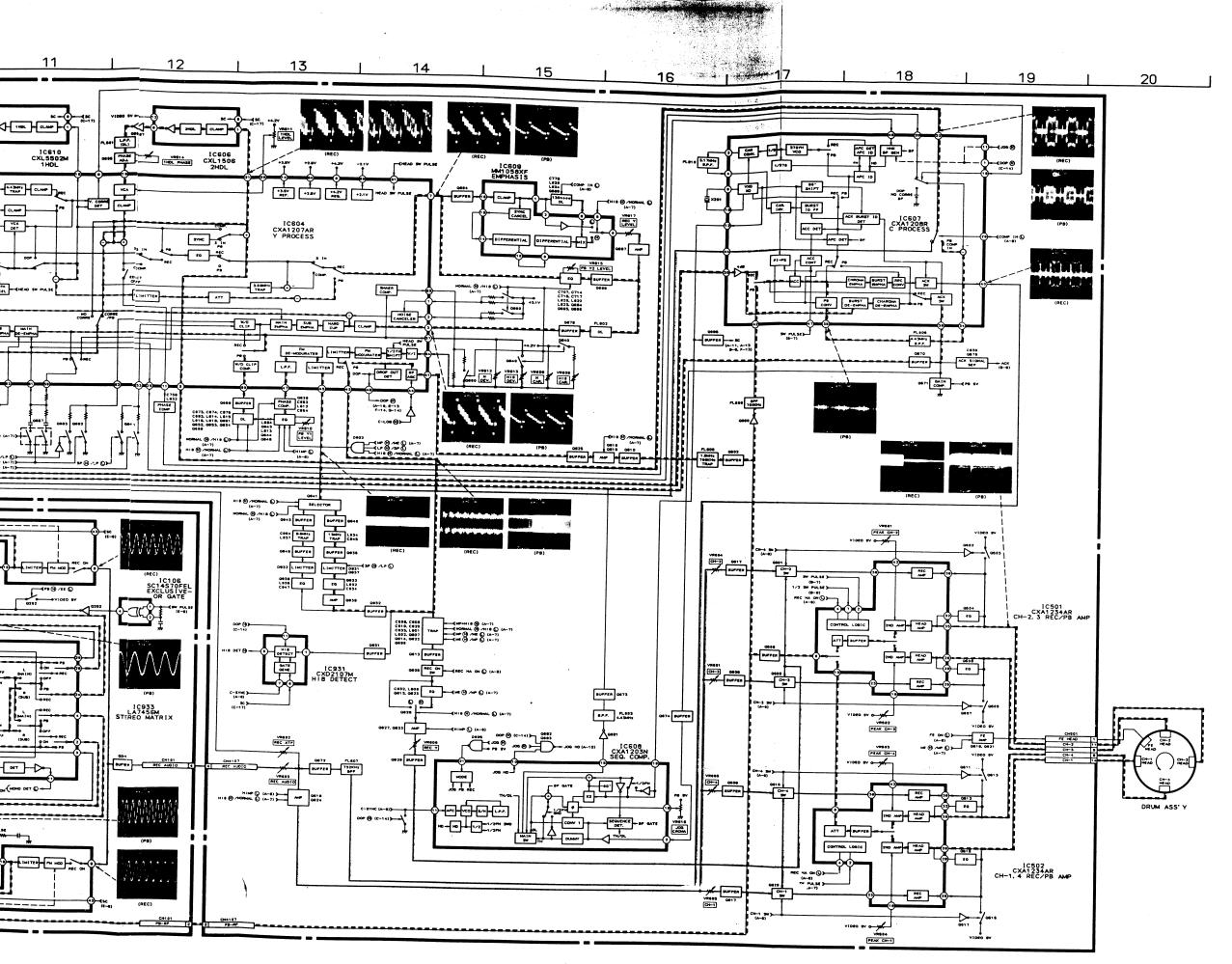


01 Nov. 1992

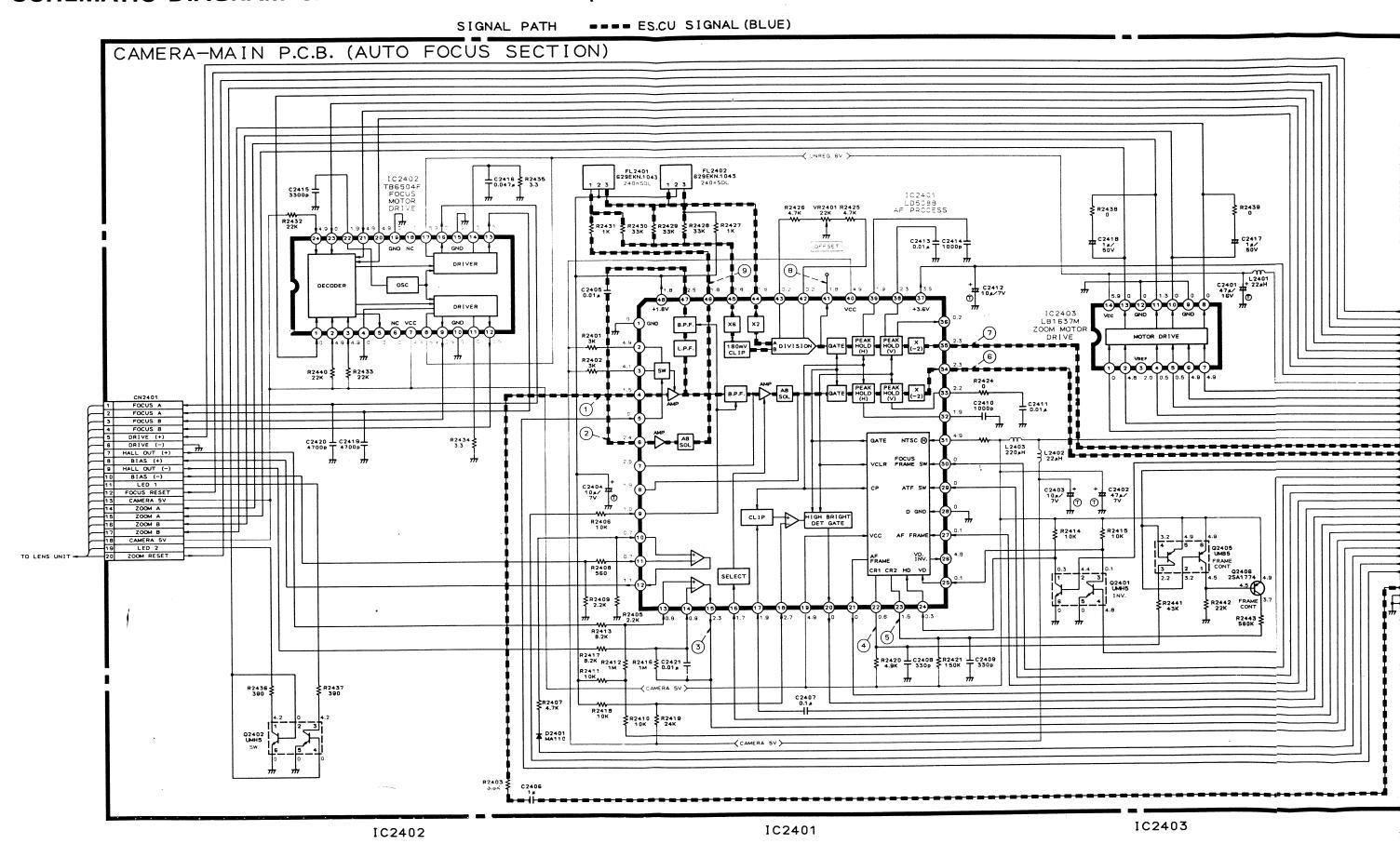


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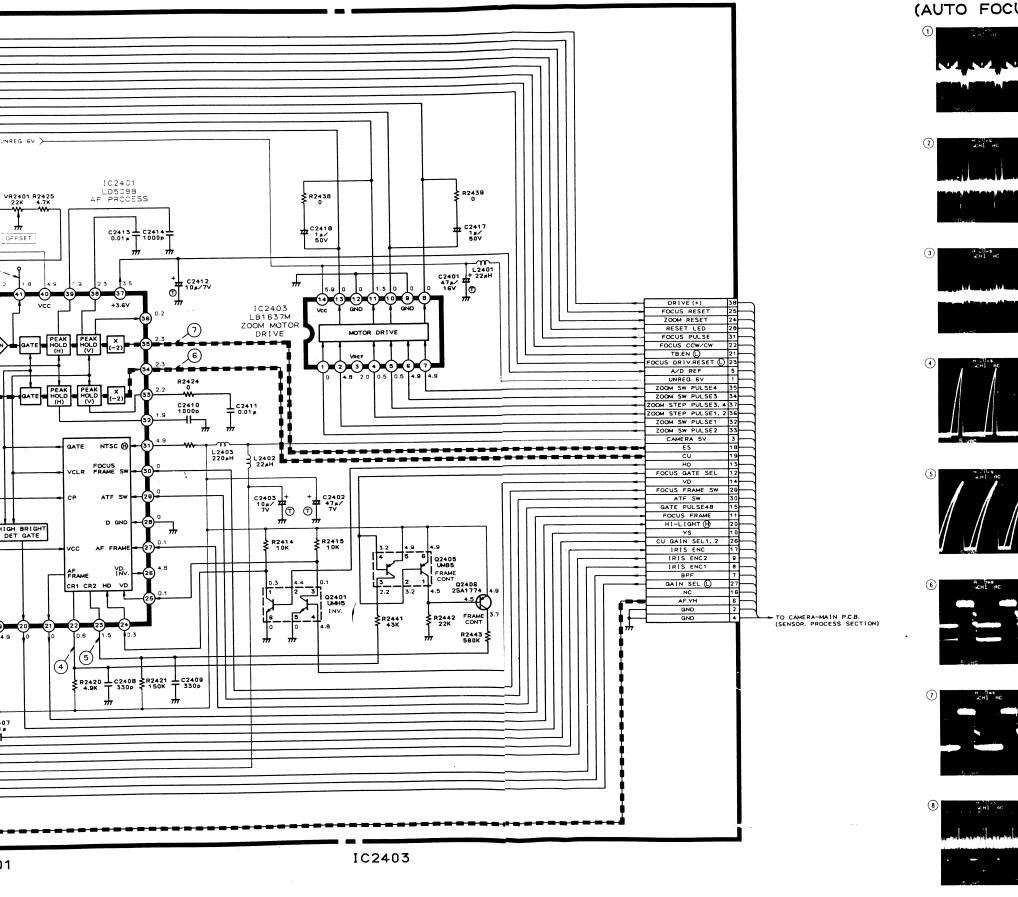


# SCHEMATIC DIAGRAM CAMERA-MAIN P.C.B. (AUTO FOCUS SECTION)



60

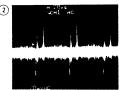
## CTION)



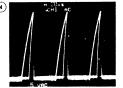
### SIGNAL WAVEFORMS (AUTO FOCUS SECTION)







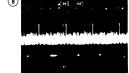












### CIRCUIT BOARD DIAGR

CAMERA MAIN P.C.B. (COMPONENT SIDE)

	D	2	0	0	1	B-
	D	2	0	0	4	C-
1	С	2	0	0	3	C-
ı	С	2	1	0	1	B-
ı	С	2	2	0	4	E-
١	С	2	3	0	1	F-
- 1	С	2	3	0	5	F
1	С	2	4	0	2	D-
	a	2	2	0	3	C-
	Q	2	2	0	4	C-
	Q	2	2	0	8	D.
	Q	2	2	0	9	D.
	Q	2	2	1	0	D.
	Q	2	2	1	1	D.
	Q	2	2	1	2	D.
	Q	2	2	1	3	D.
	Q	2	2	1	5	F
V	C	2	0	0	1	В
V	C	2	0	0	2	C
٧	'R	2	4	0	1	D

### < NOTICE >

CAMERA-MAIN P.C.B. consists of four layer (Soldering, Component, Power Supply and Gr X Through-hole marks on each P.C.B. denote:

O: Soldering side  $\longleftrightarrow$  Component side

 $\bigcirc$  : Soldering side (Component side)  $\longleftrightarrow$  Gro

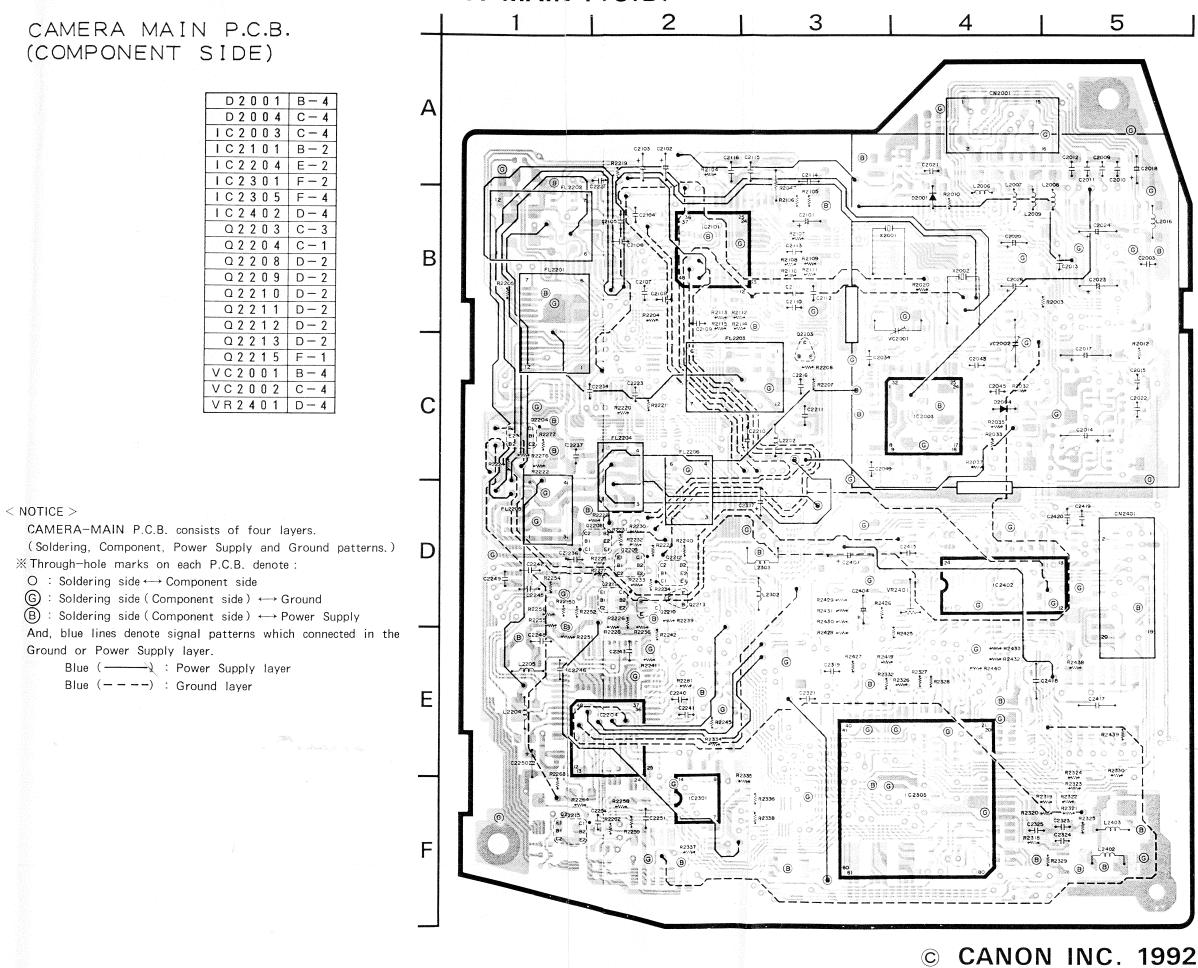
 $\overline{\mathbb{B}}$ : Soldering side (Component side)  $\longleftrightarrow$  Pow And, blue lines denote signal patterns which Ground or Power Supply layer.

> Blue (——): Power Supply layer Blue (---): Ground layer

### CIRCUIT BOARD DIAGRAM CAMERA-MAIN P.C.B.

**FORMS** 

ION)



 $\mathbb{V}-5$ 

### CIRCUIT BOARD DIAGRAM CAN

CAMERA MAIN P.C.B. (SOLDER

```
< NOTICE >
    CAMERA-MAIN P.C.B. consists of four layers.
    (Soldering, Component, Power Supply and Ground pattern
※ Through-hole marks on each P.C.B. denote:
    ○ : Soldering side ←→ Component side
    ⓒ : Soldering side (Component side) ←→ Ground
    ⑥ : Soldering side (Component side) ←→ Power Supply
    And, blue lines denote signal patterns which connected in
    Ground or Power Supply layer.
    Blue (———) : Power Supply layer
```

Blue (---): Ground layer

### BOARD DIAGRAM CAMERA-MAIN P.C.B.

RA MAIN P.C.B. (SOLDERING SIDE)

A-MAIN P.C.B. consists of four layers.

ng, Component, Power Supply and Ground patterns.)

-hole marks on each P.C.B. denote:

dering side ←→ Component side

dering side (Component side)  $\longleftrightarrow$  Ground

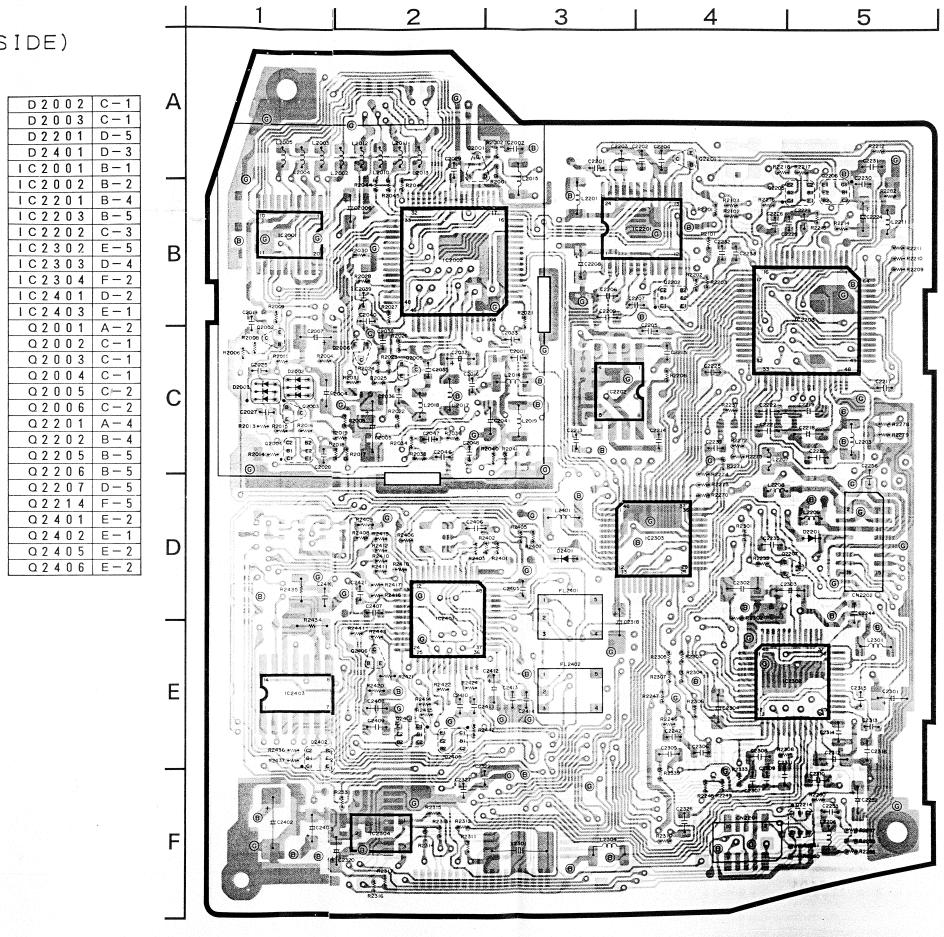
dering side (Component side) ← Power Supply

e lines denote signal patterns which connected in the

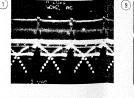
or Power Supply layer.

ue (——) : Power Supply layer

ue (---): Ground layer



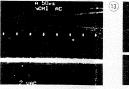
SIGNAL WAV



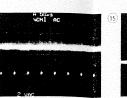






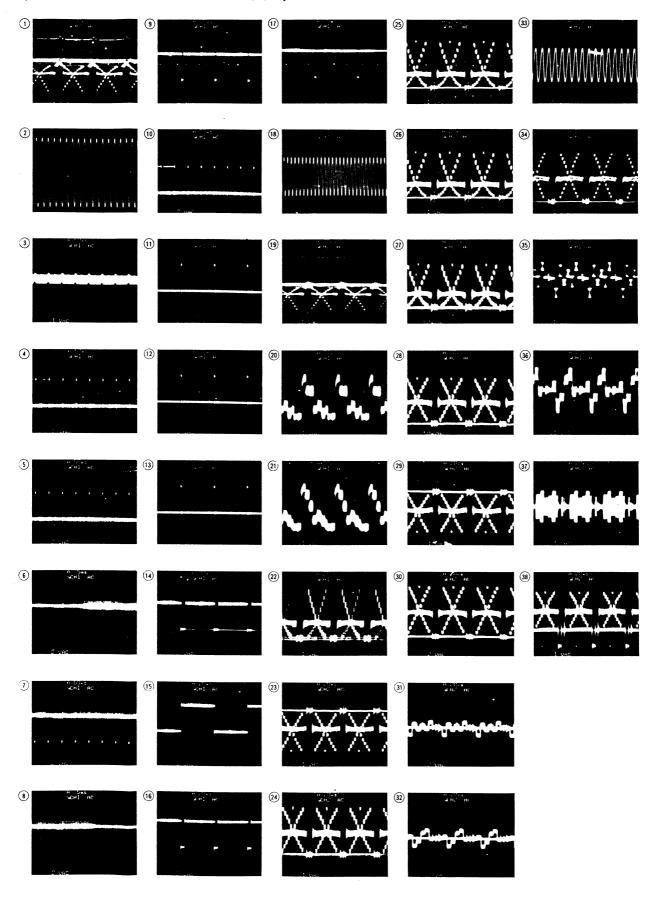




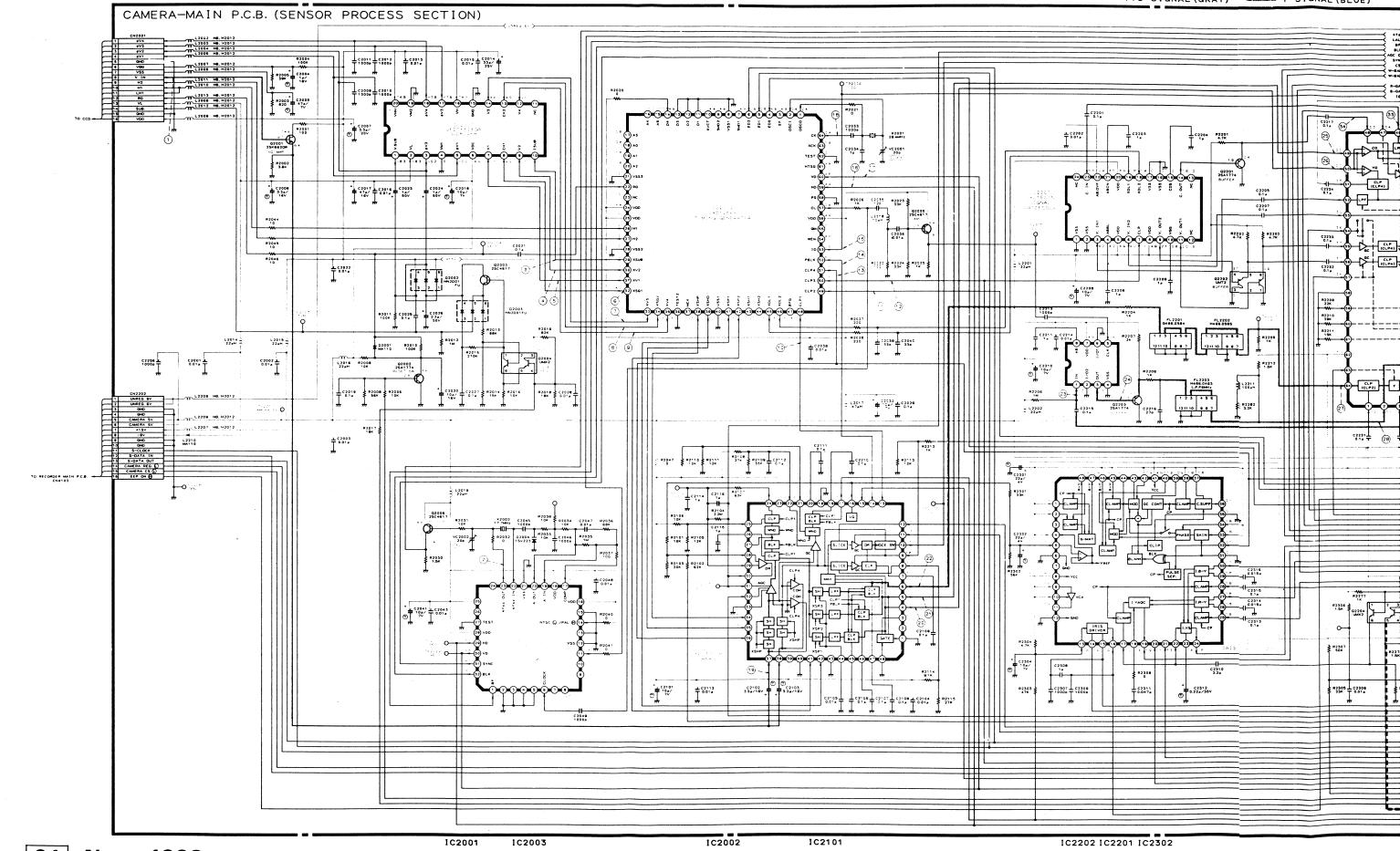


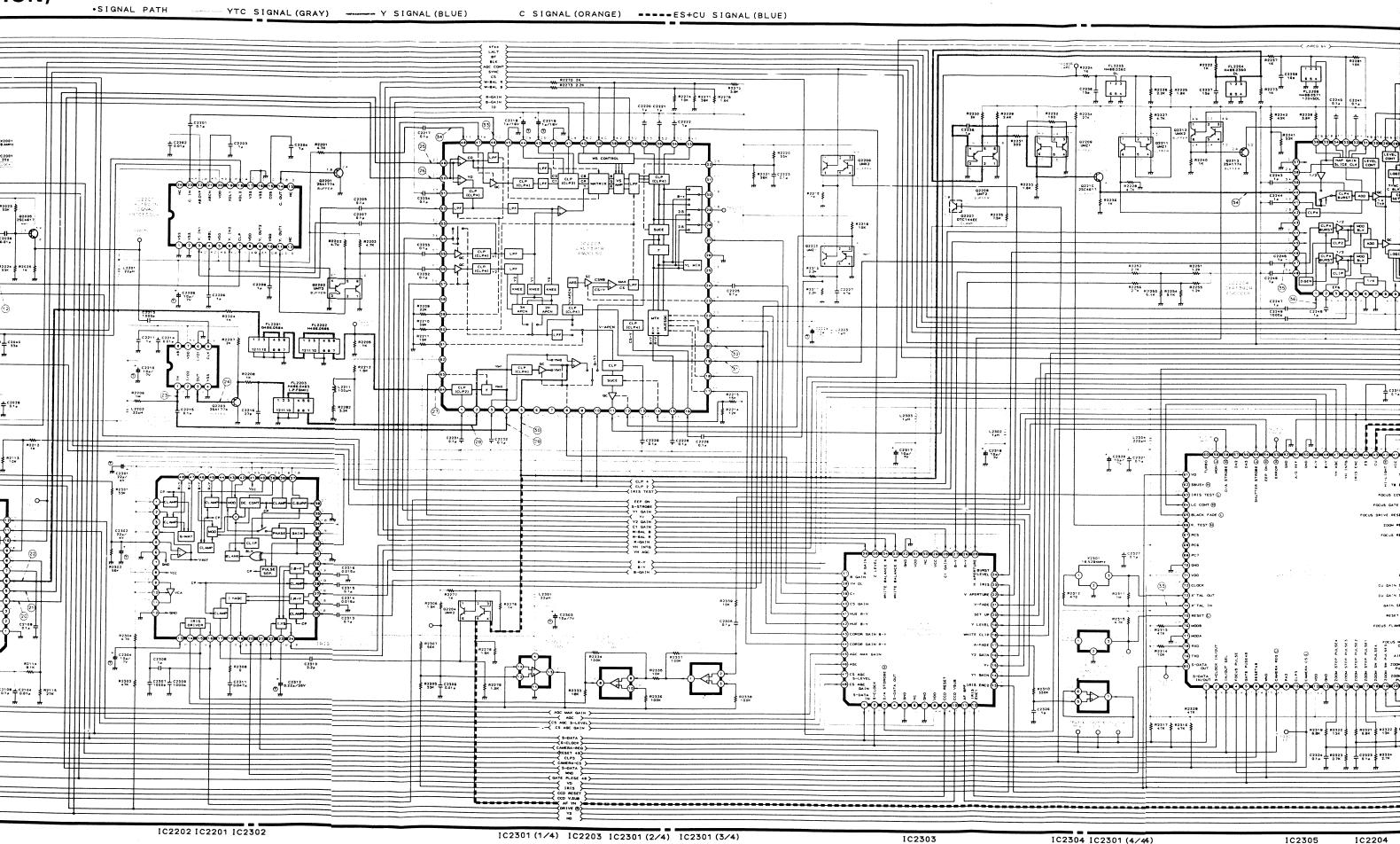


# SIGNAL WAVEFORMS (SENSOR PROCESS SECTION)



YTC SIGNAL (GRAY) Y SIGNAL (BLUE)

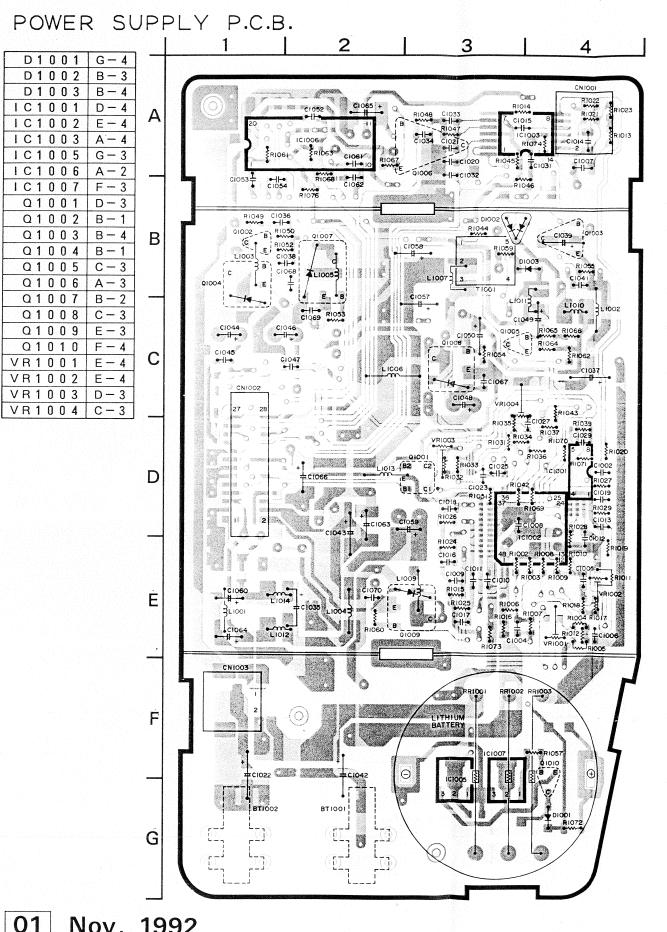




L (BLUE) 36K C2223 C2252 10a/ 71/ TIT L2303 IC2304 IC2301 (4/44) IC2303 IC2305 IC2204

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### CIRCUIT BOARD DIAGRAM POWER SUPPLY P.C.B. & RECORDER-MAIN P.C.B.



RECORDER MAIN P.C.B. (COMPONENT SIDE)

< NOTICE >

RECORDER-MAIN P.C.B. consists of four layers.

(Soldering, Component, Power Supply and Ground patterns.)

※ Through-hole marks on each P.C.B. denote:

O: Soldering side  $\longleftrightarrow$  Component side

 $\bigcirc$  : Soldering side (Component side)  $\longleftrightarrow$  Ground

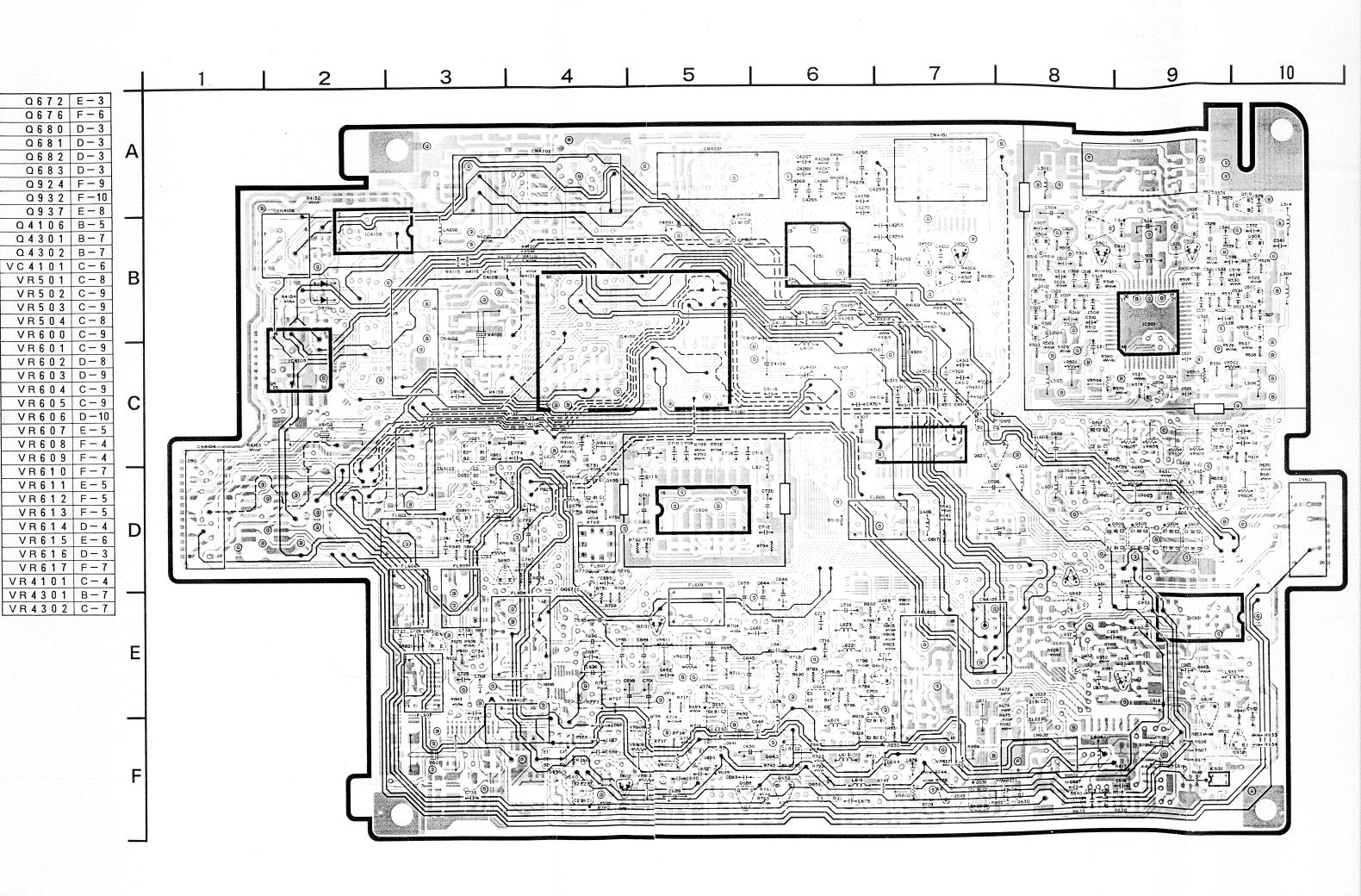
B: Soldering side (Component side)  $\longleftrightarrow$  Power Supply And, blue lines denote signal patterns which connected in the

Ground or Power Supply layer.

Blue (-----): Power Supply layer

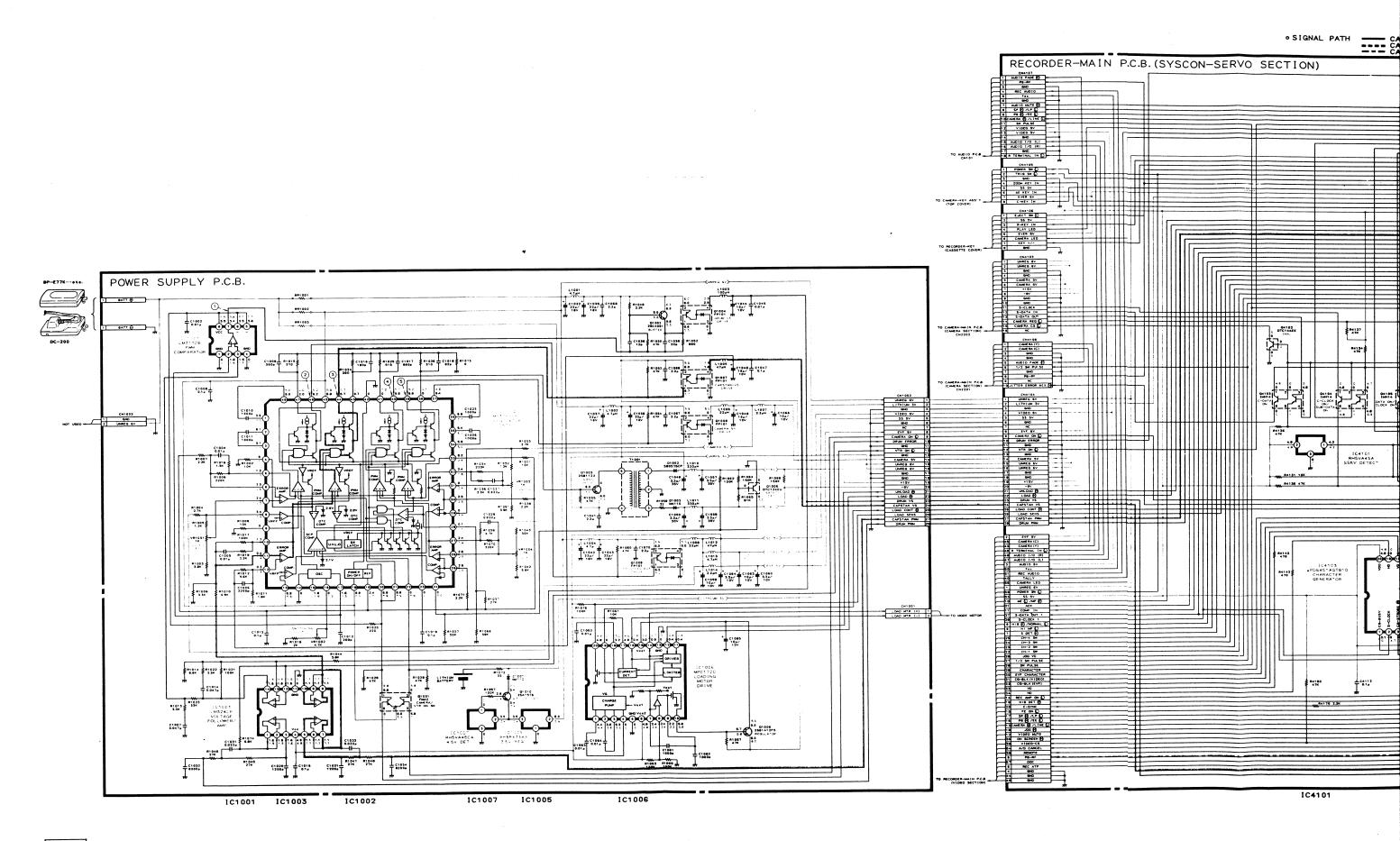
Blue (---): Ground layer

D 5 0 1   B - 8   D 5 0 2   B - 9   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D - 8   D 6 0 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0   D 6 0 0 0   D 6 0   D 6 0 0   D 6 0   D 6 0 0   D 6 0							<b>1</b>	
D 5 0 2   B - 9     D 6 0 0 0   D - 8     D 6 0 0 1   E - 5     D 6 0 0 2   F - 4     D 9 3 1   E - 9     D 4 3 0 1   B - 7     I C 5 0 1   7 - 9     I C 6 0 6   D - 5     I C 9 3 1   E - 9     I C 4 1 0 2   B - 4     I C 4 1 0 5   C - 2     I C 4 1 0 6   B - 2     I C 4 2 5 1   B - 6     I C 4 3 0 3   C - 7     O 5 0 1   B - 8     O 5 0 2   B - 8     O 5 0 3   B - 8     O 5 0 4   B - 8     O 5 0 5   B - 9     O 5 0 6   C - 9     O 5 0 8   B - 10     O 6 0 5   D - 9     O 6 0 5   D - 9     O 6 0 5   D - 9     O 6 0 5   D - 9     O 6 0 5   D - 9     O 6 0 6   D - 8     O 6 0 7   C - 7     O 6 2 3   D - 9     O 6 0 8 0 7     O 6 0 8 0 7     O 7   C - 8     O 8 0 8 0 7	D 5 0 1 E	3 – 8	Q 6	7 2	E - 3			B-100-
D 6 0 0 0 0 - 8	D 5 0 2 E	3 – 9		7 6	F - 6			
D 6 0 1   E - 5     D 6 0 2   F - 4     D 9 3 1   E - 9     D 4 1 0 1   B - 2     D 4 3 0 1   B - 7     I C 5 0 1   7 - 9     I C 6 0 6   D - 5     I C 9 3 1   E - 9     I C 6 0 6   D - 5     I C 4 1 0 5   C - 2     I C 4 1 0 6   B - 2     I C 4 2 5 1   B - 6     I C 4 3 0 3   C - 7     O 5 0 1   B - 8     O 5 0 2   B - 8     O 5 0 3   B - 8     O 5 0 5   B - 9     O 5 0 6   C - 9     O 5 0 7   B - 10     O 5 1 8   A - 10     O 5 1 8   A - 10     O 5 1 8   A - 10     O 5 1 8   A - 10     O 6 0 3   D - 9     O 6 0 4   D - 9     O 6 0 5   D - 9     O 6 0 6   D - 8     O 6 0 7   D - 4     O 6 0 8   F - 4     O 6 0 8   F - 5     O 6 6 4 0   F - 4     O 6 6 5 2   F - 6     O 6 6 6 7   D - 4	D 6 0 0 C	8 – 0		8 0				
D 6 0 2 F - 4 D 9 3 1 E - 9 D 4 1 0 1 B - 2 D 4 3 0 1 B - 7 I C 5 0 1 7 - 9 I C 6 0 2 F - 9 I C 6 0 2 F - 9 I C 6 0 6 D - 5 I C 9 3 1 E - 9 I C 6 0 6 D - 5 I C 9 3 1 E - 9 I C 4 1 0 2 B - 4 I C 4 1 0 5 C - 2 I C 4 1 0 6 B - 2 I C 4 2 5 1 B - 6 I C 4 3 0 3 C - 7 O 5 0 1 B - 8 O 5 0 2 B - 8 O 5 0 2 B - 8 O 5 0 3 B - 8 O 5 0 4 B - 8 O 5 0 5 B - 9 O 5 0 7 B - 10 O 5 0 8 B - 10 O 5 0 8 B - 10 O 5 0 9 C - 10 O 5 0 8 B - 10 O 5 0 9 C - 10 O 5 0 8 B - 10 O 6 0 0 C - 9 VR 6 0	D 6 0 1 E	= - 5						
D 9 3 1 E − 9 D 4 1 0 1 B − 2 D 4 3 0 1 B − 7 I C 5 0 1 7 − 9 I C 6 0 2 F − 9 I C 6 0 6 D − 5 I C 9 3 1 E − 9 I C 4 1 0 2 B − 4 I C 4 1 0 2 B − 4 I C 4 1 0 5 C − 2 I C 4 2 5 1 B − 6 I C 4 3 0 3 C − 7 Q 5 0 1 B − 8 Q 5 0 3 B − 8 Q 5 0 3 B − 8 Q 5 0 3 B − 8 Q 5 0 5 B − 9 Q 5 0 6 C − 9 Q 5 0 7 B − 10 Q 5 0 8 B − 10 Q 6 0 6 D − 9 Q 6 0 6 0 − 9 Q 6 0 0 − 7 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 − 9 Q 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	D 6 0 2 F	- 4				Α		
D 4 1 0 1 B - 2 D 4 3 0 1 B - 7 I C 5 0 1 7 - 9 I C 6 0 6 D - 5 I C 9 3 1 E - 9 I C 4 1 0 2 B - 4 I C 4 1 0 5 C - 2 I C 4 1 0 6 B - 2 I C 4 2 5 B - 6 I C 4 3 0 3 C - 7 O 5 0 1 B - 8 O 5 0 2 B - 8 O 5 0 3 B - 8 O 5 0 3 B - 8 O 5 0 0 4 B - 8 O 5 0 0 7 B - 10 O 5 0 8 B - 10 O 6 0 5 D - 9 O 6 0 6 D - 8 O 6 1 C - 8 O 6 1 C - 8 O 6 1 C - 8 O 7 6 1 5 D - 9 O 6 0 6 D - 8 O 6 1 C - 8 O 7 6 1 5 D - 9 O 6 0 6 D - 8 O 6 1 C - 8 O 6 1 C - 8 O 6 1 C - 8 O 6 1 C - 8 O 6 2 0 C - 7 O 6 2 0 C - 7 O 6 3 7 F - 5 O 6 4 0 F - 4 O 6 5 5 F - 7 O 6 5 5 F - 5 O 6 6 5 0 F - 5 O 6 6 5 0 F - 5 O 6 6 5 0 F - 5 O 6 6 6 7 D - 4 O 6 6 7 D - 4	D 9 3 1 E	= - 9						
D 4 3 0 1   B - 7     C 5 0 1   7 - 9     C 6 0 2   F - 9     C 6 0 2   F - 9     C 6 0 6   D - 5     C 4 3 0 3   E - 8     C 4 1 0 6   B - 5     C 4 1 0 2   B - 4     V 4 1 0 1   C - 6     V 4 1 0 1   C - 8     V 4 1 0 1   C - 8     V 4 5 0 1   C - 8     V 4 5 0 1   C - 8     V 4 5 0 1   C - 8     V 4 5 0 1   C - 8     V 4 5 0 1   C - 8     V 4 5 0 1   C - 8     V 4 5 0 1   C - 8     V 4 5 0 1   C - 8     V 4 5 0 1   C - 8     V 4 5 0 1   C - 8     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 5 0 1   C - 9     V 4 6 1 1   C - 5     V 6 6 1   C - 5     V 6 6 1   C - 5     V 6 6 1   C - 5     V 6 6 1   C - 5     V 6 6 1   C - 5     V 6 6 1   C - 5	D4101 E	3 – 2	Q 9	2 4	F - 9			
T C 5 0 1   7 - 9	D4301 E	3 – 7	0.9	3 2				
C 6 0 2   F - 9	IC501 7	7 – 9	Q 9	3 7				1
C 9 3 1   E - 9	I C 6 O 2 F	- 9						
		) – 5	Q 4 3	0 1	B - 7			
C 4 1 0 5   C - 2     C 4 1 0 6   B - 2     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 5 5   B - 9     C 4 5 5   C - 9     C 5 7   C 6 5 5   C - 9     C 7   C 6 5 5   C - 4     C 6 6 6 7   D - 4     C 8 7   C 6 6 7   D - 4     C 8 7   C 6 6 7   D - 4     C 8 7   C 6 6 7   D - 4     C 8 7   C 6 6 7   D - 4     C 8 7   C 6 6 7   D - 4     C 8 7   C 6 7   C 6 7     C 8 7   C 6 6 7   D - 4     C 8 7   C 7   C 6 6 7   D - 4     C 8 7   C 7   C 7   C 7     C 8 7		<u> </u>	Q 4 3	0 2	B <b>- 7</b>			150
C 4 1 0 6   B - 2     C 4 2 5 1   B - 6     C 4 2 5 1   B - 6     C 4 3 0 3   C - 7     Q 5 0 1   B - 8     Q 5 0 2   B - 8     Q 5 0 3   B - 8     Q 5 0 4   B - 8     Q 5 0 5   B - 9     Q 5 0 6   C - 9     Q 5 0 7   B - 10     Q 5 0 8   B - 10     Q 6 0 3   D - 9     Q 6 0 4   D - 9     Q 6 0 4   D - 9     Q 6 0 5   D - 9     Q 6 0 6   D - 8     Q 6 1 7   C - 8     Q 6 2 9   E - 8     Q 6 3 0   F - 8     Q 6 3 0   F - 8     Q 6 3 0   F - 8     Q 6 4 0   F - 7     Q 6 3 3   F - 5     Q 6 4 0   F - 4     Q 6 4 1   F - 5     Q 6 5 5   D - 4     Q 6 5 8   F - 5     Q 6 6 6 7   D - 4      F     F     F     F     F     O 5 0 1   B - 8     O 7 0 0 0 0     O 8 0 0 0     O 8 0 0 0     O 9 0 0 0     O 9 0 0 0 0     O 9 0 0 0 0     O 9 0 0 0 0     O 9 0		3 – 4	V C 4 1	0 1	C - 6			i i
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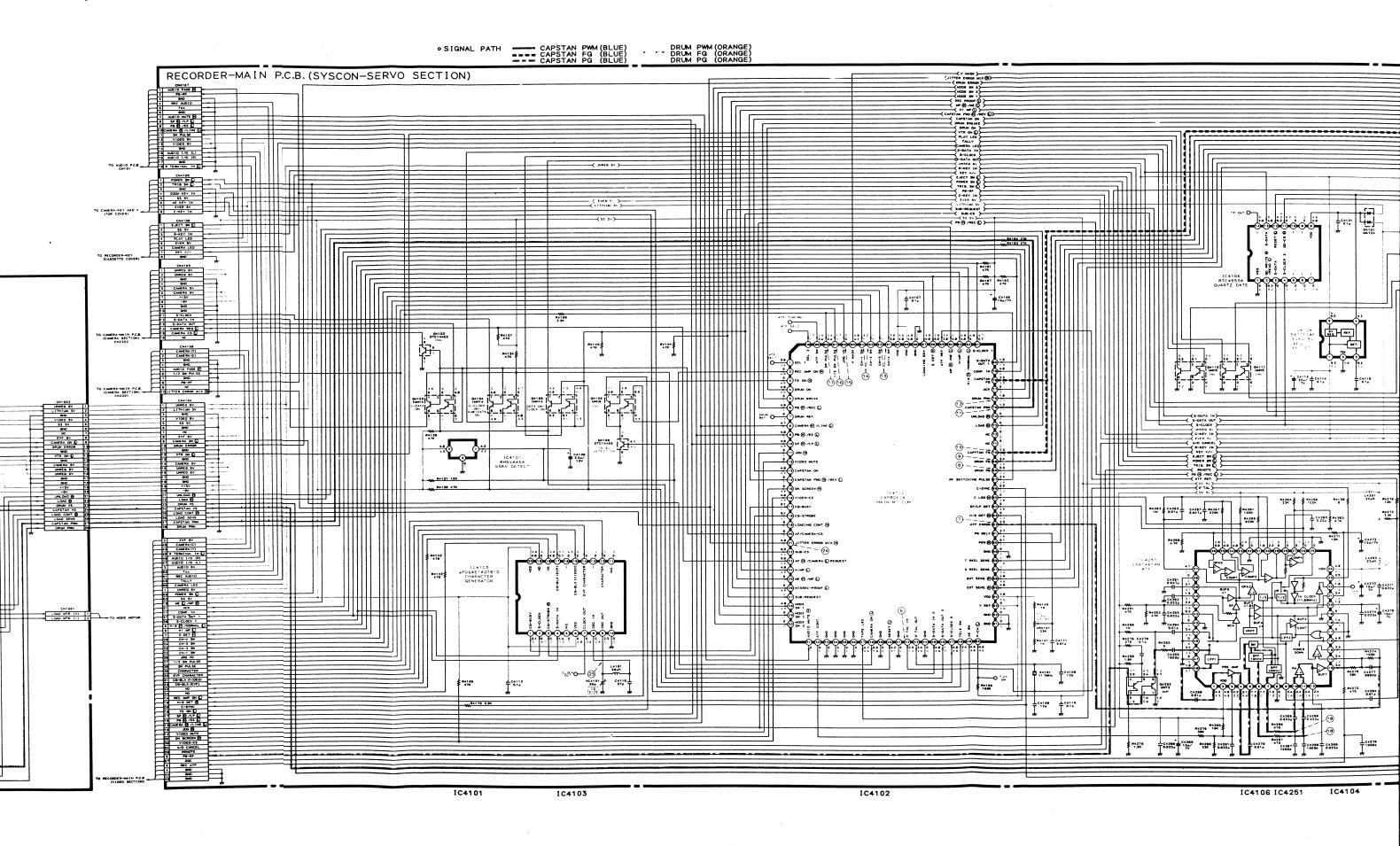


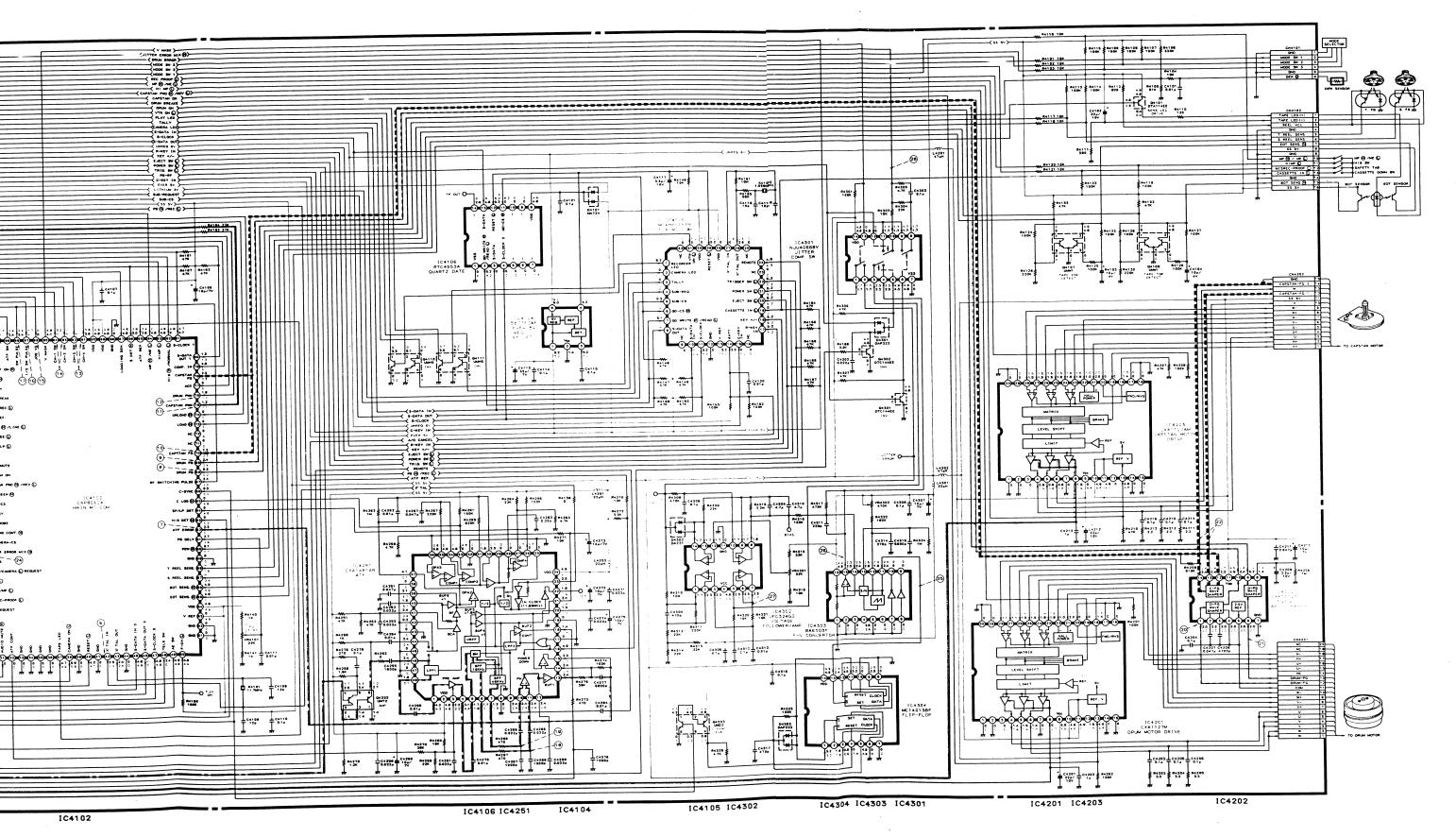
# SIGNAL WAVEFORMS (SYSCON-SERVO SECTION) 10 9 17 25) A EGAR (REC) 26 2 (REC) 27) я 5-s чсн1 нғ 11) 28 12 יהרתתחתתו 21) A 18-se WCH1 HF 91 92) A 18-as 93 14) 94) 8 16

# SCHEMATIC DIAGRAM POWER SUPPLY P.C.B., RECORDER-MAIN P.C.B. (SYSCON-SERVO SECTION)



### P.C.B. (SYSCON-SERVO SECTION)





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# CIRCUIT BOARD DIAGRAM RECORDER-MAIN P.C.B. & JACK P.C.B.

# RECORDER MAIN P.C.B. (SOLDERING SIDE)

< NOTICE >

RECORDER-MAIN P.C.B. consists of four layers. (Soldering, Component, Power Supply and Ground patterns.)

 $\ensuremath{\hspace{.05cm}\raisebox{.4ex}{$\times$}}$  Through-hole marks on each P.C.B. denote :

O: Soldering side  $\longleftrightarrow$  Component side

 $\bigcirc$  : Soldering side (Component side)  $\longleftrightarrow$  Ground

B: Soldering side (Component side) ← Power Supply

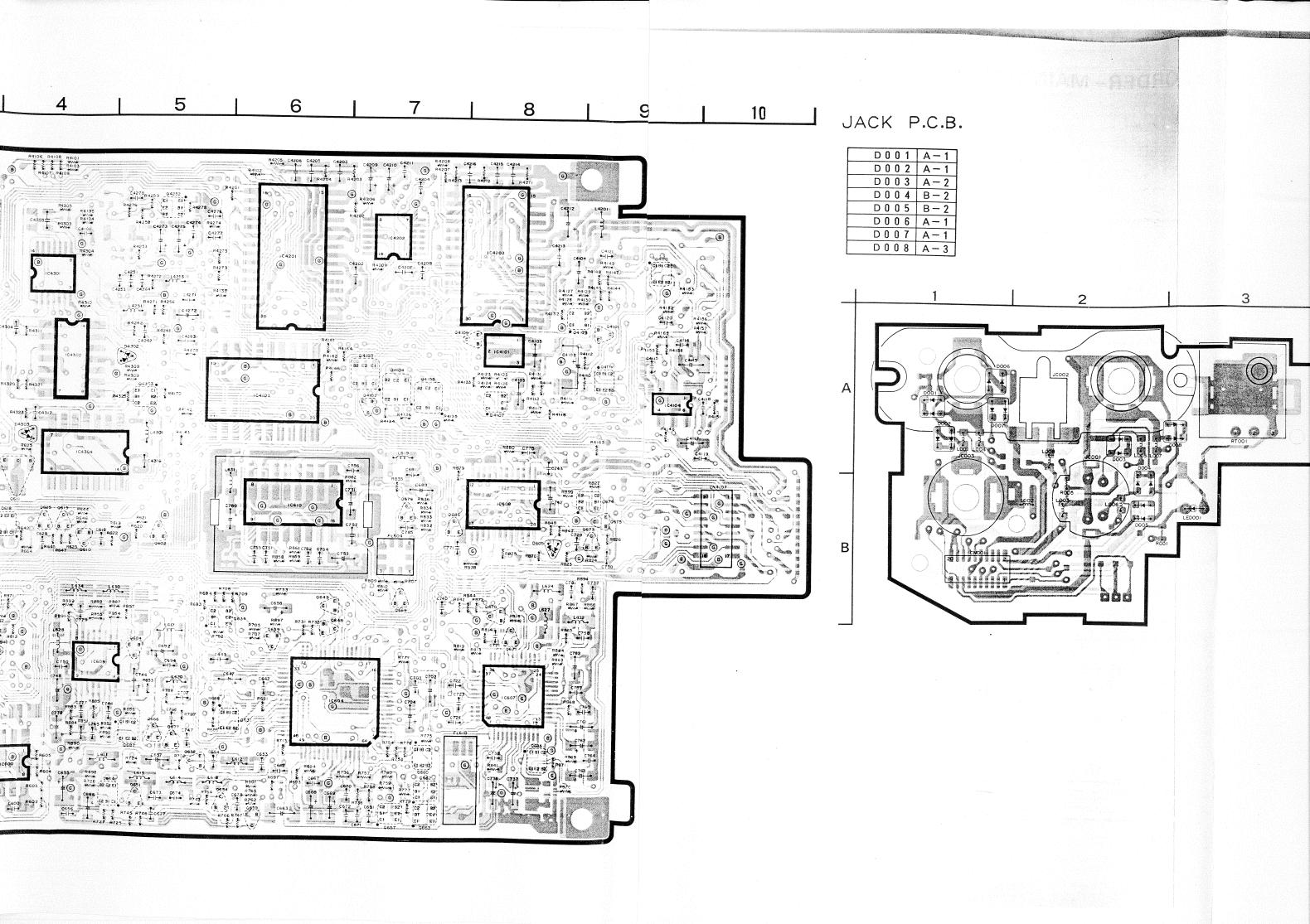
And, blue lines denote signal patterns which connected in the

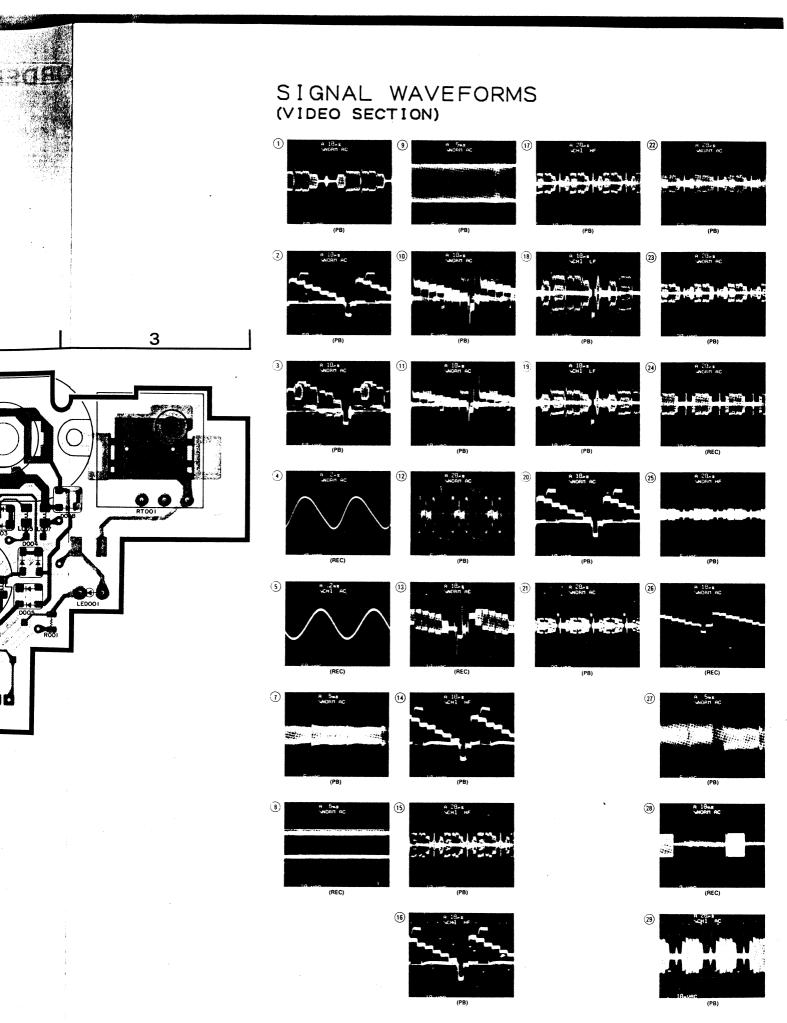
Ground or Power Supply layer.

Blue (———): Power Supply layer

Blue (---): Ground layer

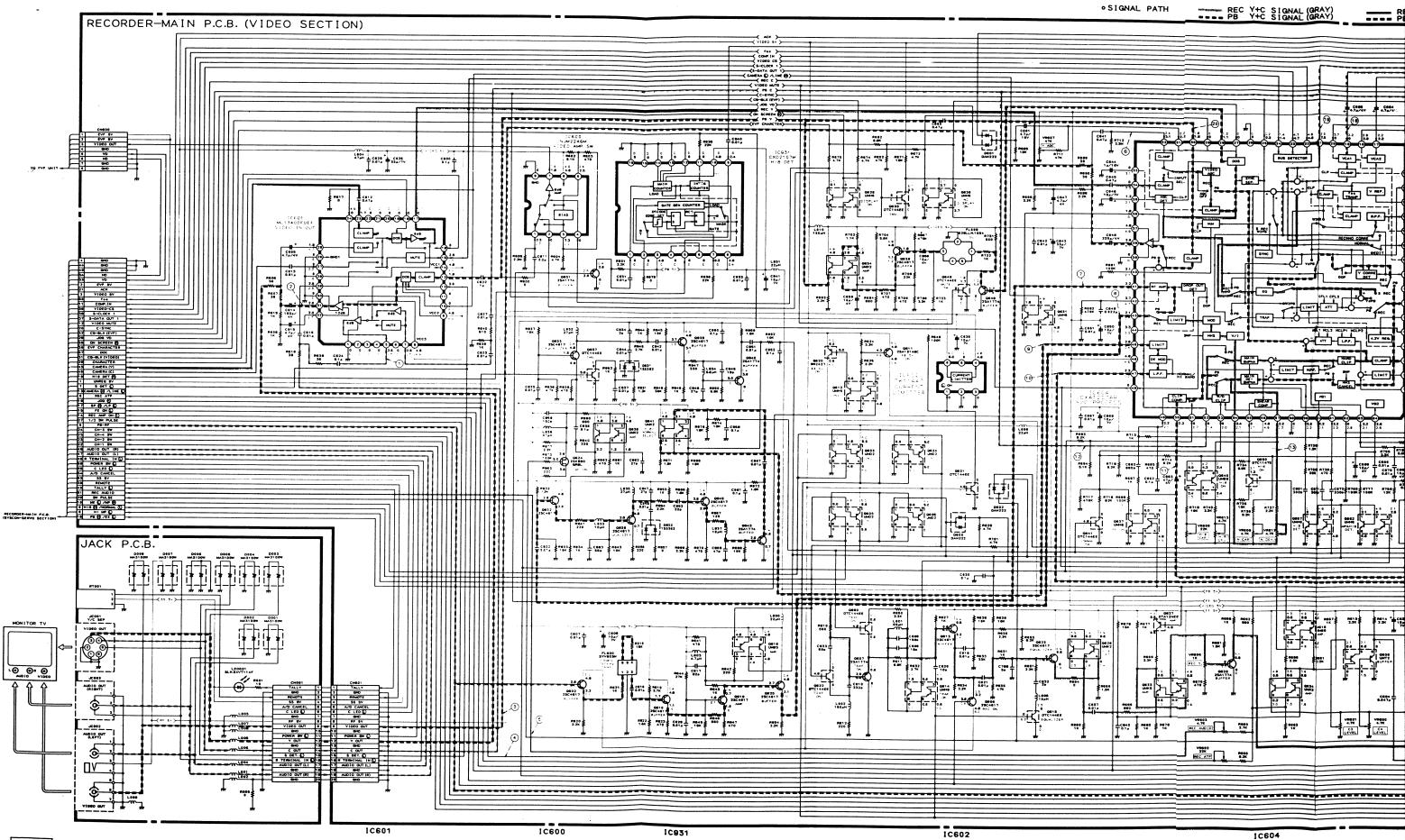
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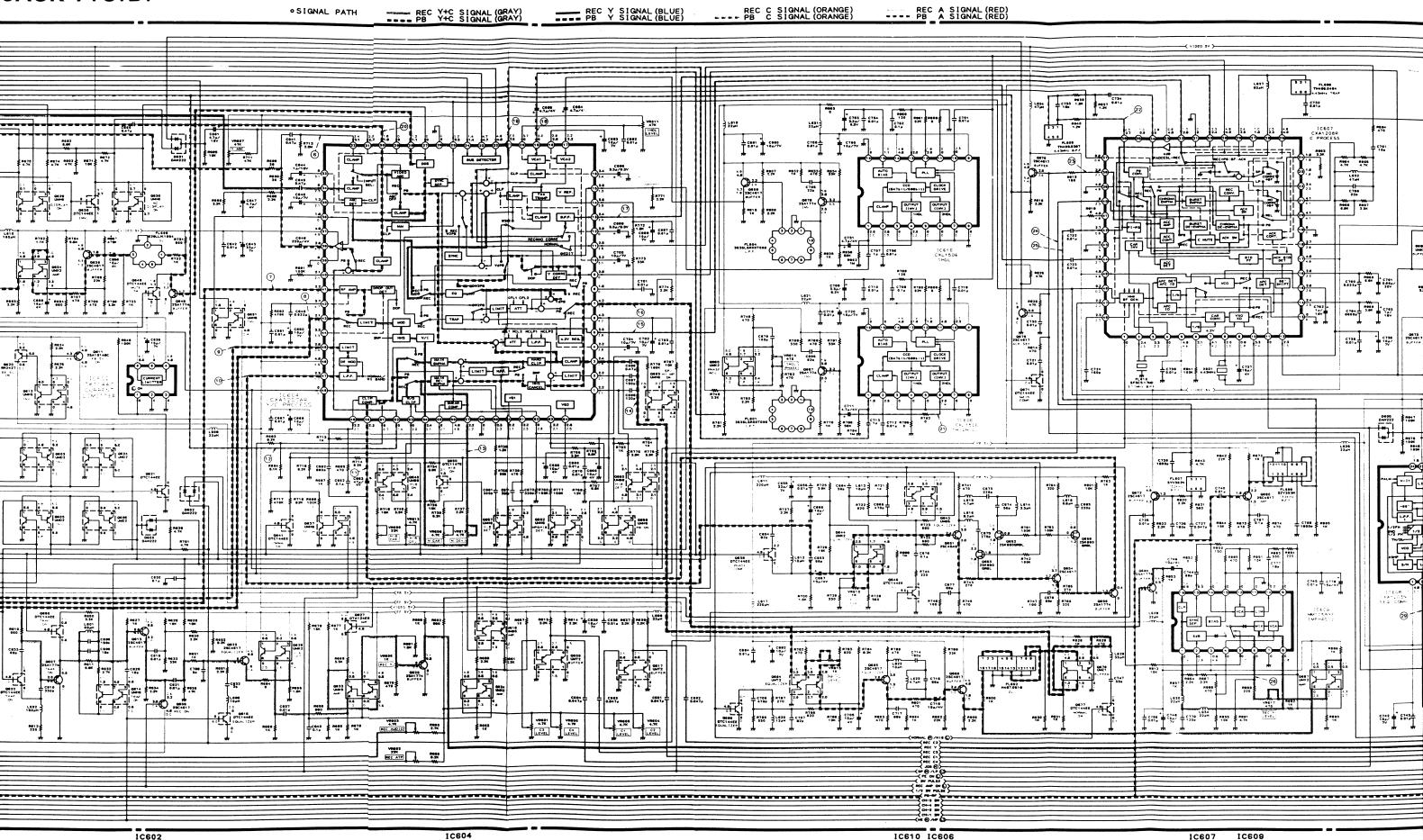


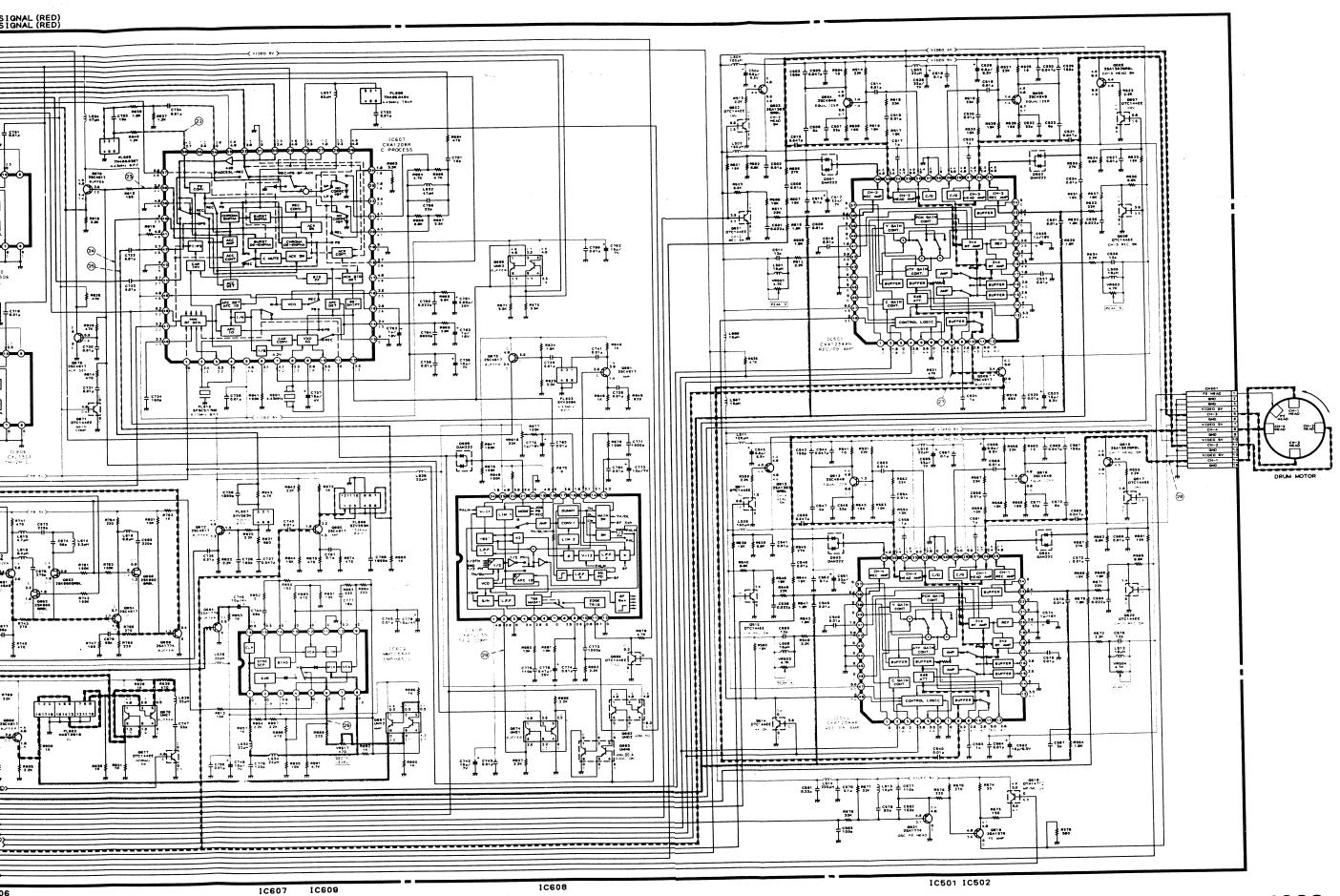


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# SCHEMATIC DIAGRAM RECORDER-MAIN P.C.B. (VIDEO SECTION), JACK P.C.B.







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### CIRCUIT BOARD DIAGRAM AUDIO P.C.B.

AUDIO P.C.B. (COMPONENT SIDE)

I C 1 0 3	D – 2
IC10-4	B 2
IC106	C – 2
1 C 1 0 9	A – 2
Q 1 0 1	D - 2
Q 1 0 2	B - 2
Q 2 0 2	C – 2
Q 2 <b>0</b> 3	A – 1
Q 2 0 4	C – 2
VR101	C - 1
VR102	B - 1
VR103	C – 2
VR104	B – 2

### < NOTICE >

AUDIO P.C.B. consists of four layers.

(Soldering, Component, Power Supply and Ground patterns.)

- X Through-hole marks on each P.C.B. denote:
- O : Soldering side ←→ Component side
- G : Soldering side (Component side) ←→ Ground
   B : Soldering side (Component side) ←→ Power Supply And, blue lines denote signal patterns which connected in the

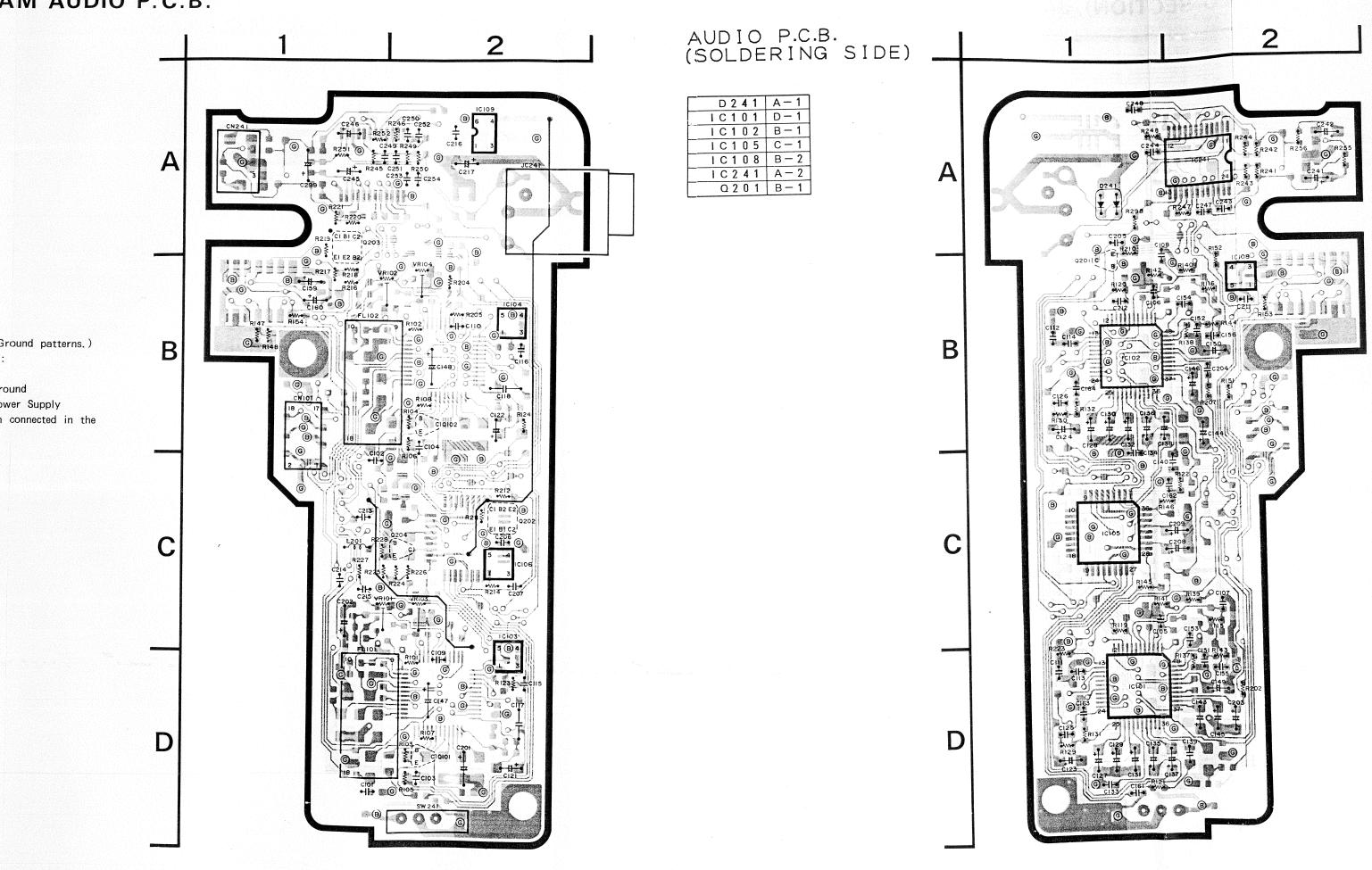
Ground or Power Supply layer.

Blue (——): Power Supply layer Blue (---): Ground layer



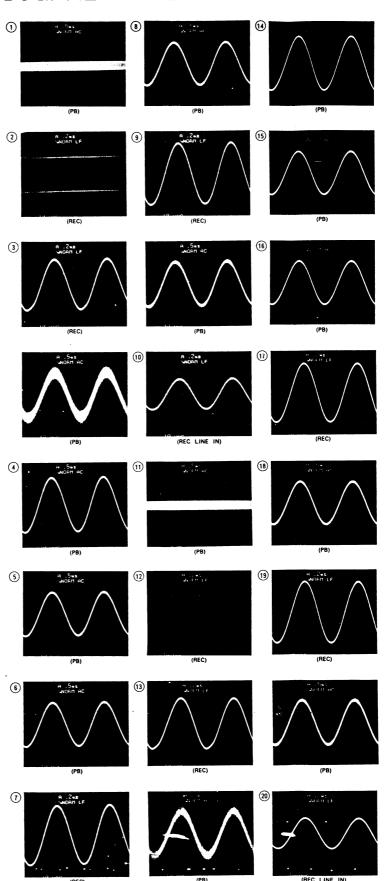


AM AUDIO P.C.B.



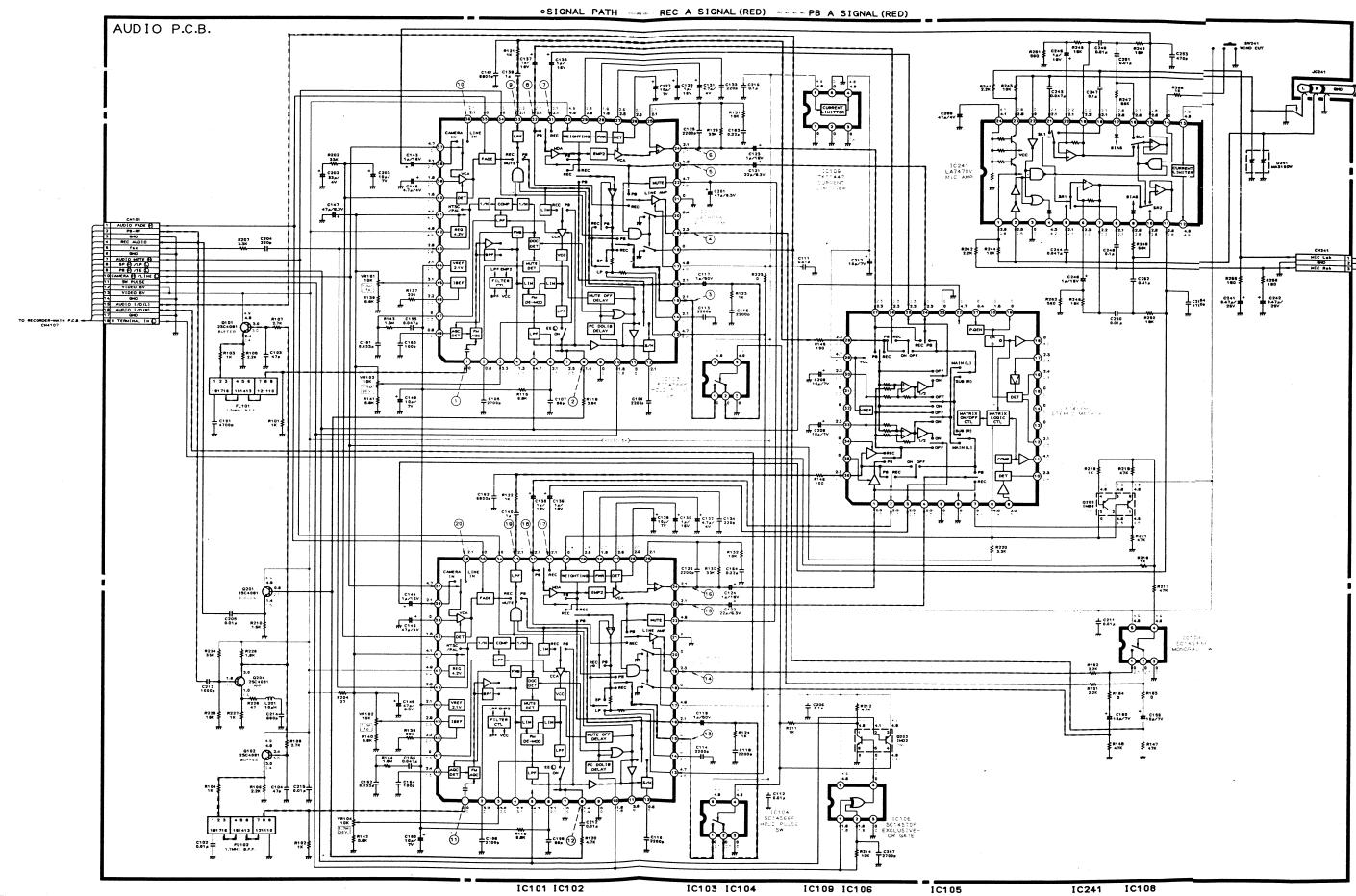
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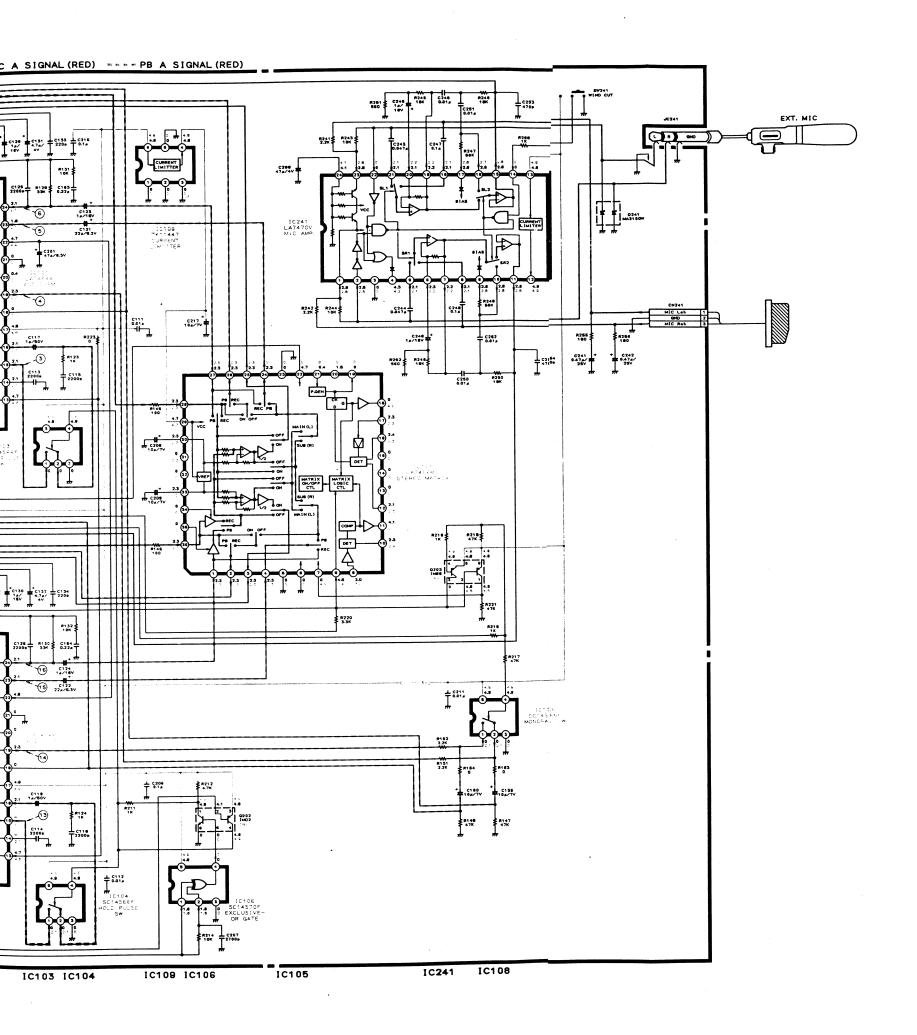
### SIGNAL WAVEFORMS



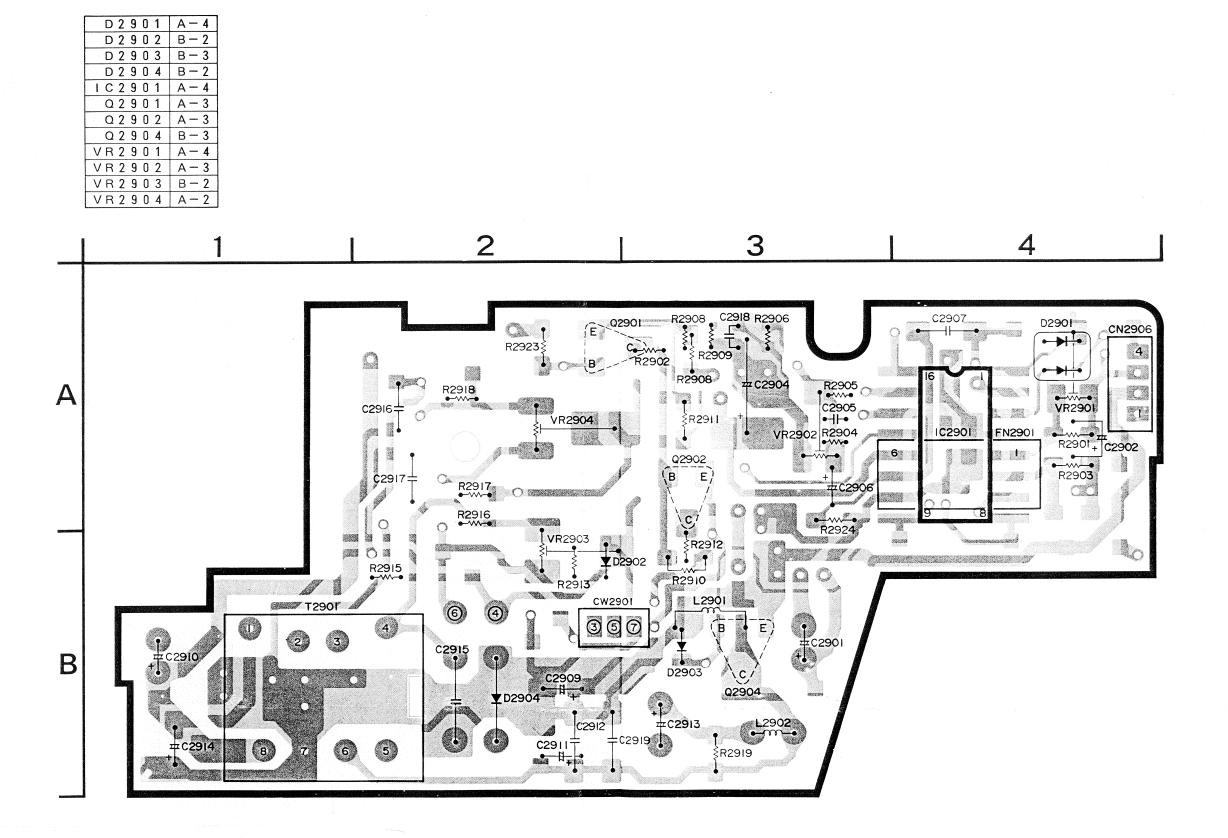
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### SCHEMATIC DIAGRAM AUDIO P.C.B.



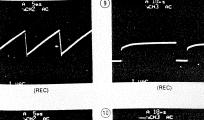


### CIRCUIT BOARD DIAGRAM EVF P.C.B.



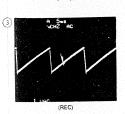
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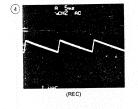
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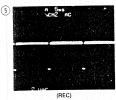


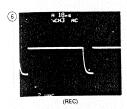
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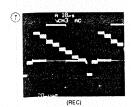


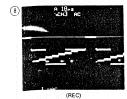




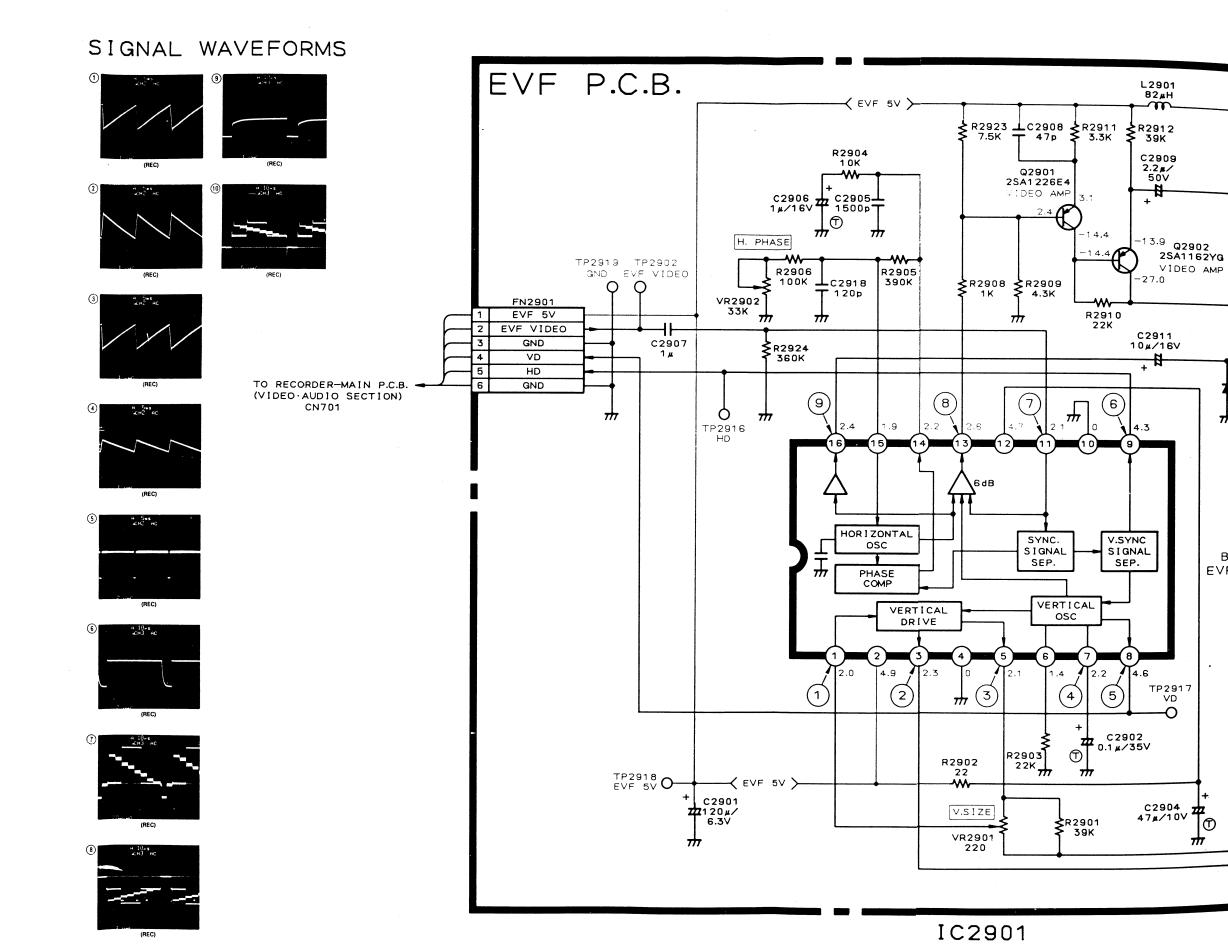








### SCHEMATIC DIAGRAM EVF P.C.B.



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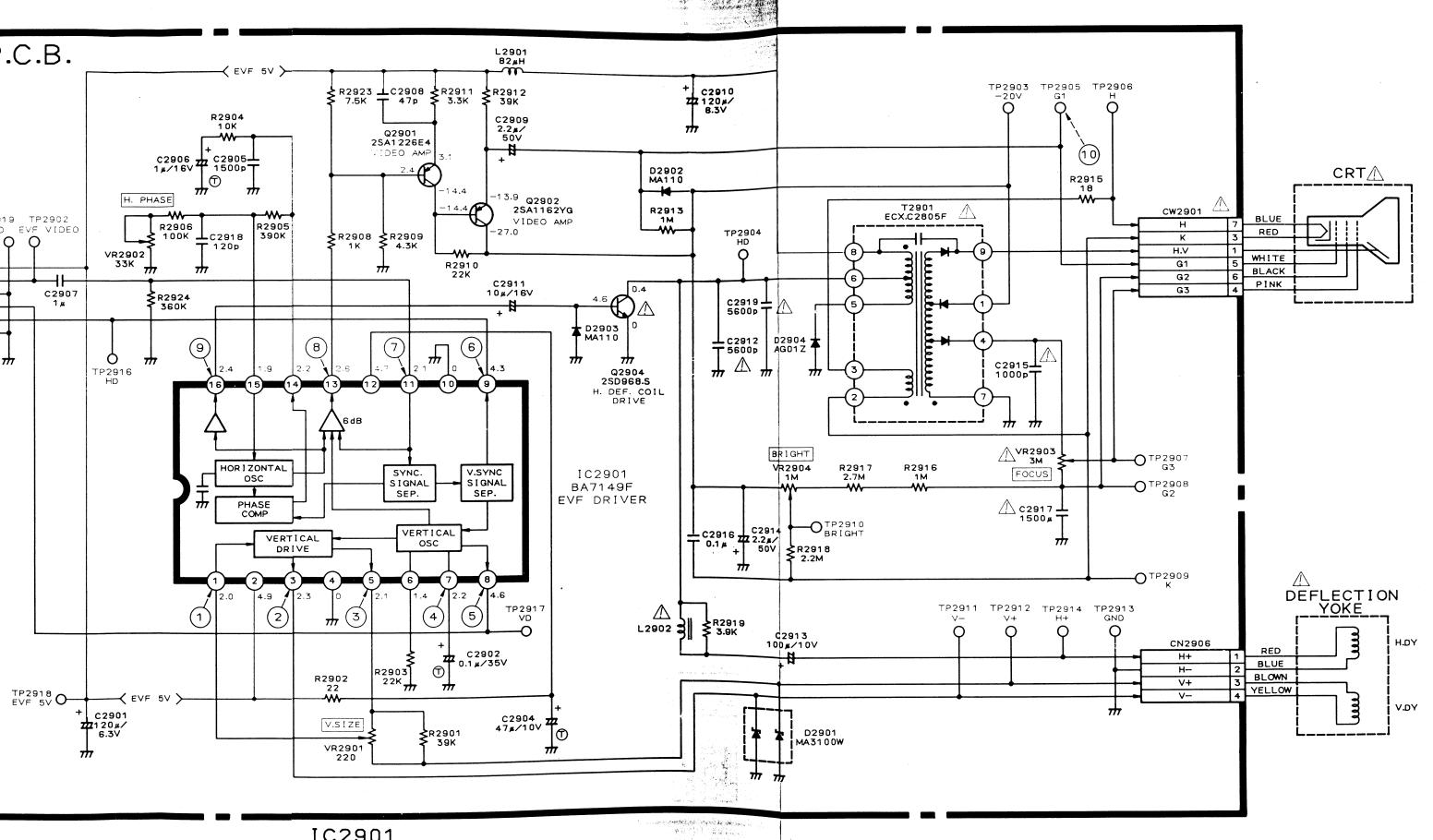
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